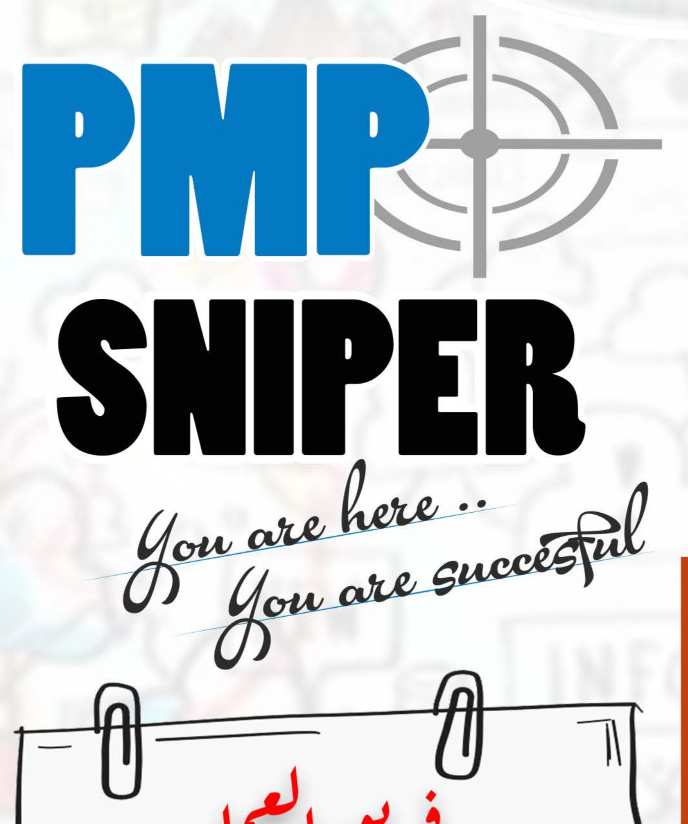




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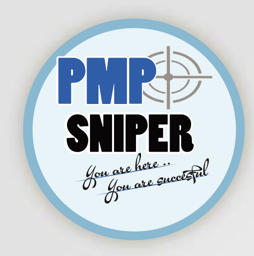
PMP



إعداد

م/ ياسر الزنوني

yasserelzanouny





1

Framework

#Framework





#Framework 1

Chapter (1, 2, 3)

1- (Framwork)

Project: (temperory) endavor undertaken to Create (unique) Product, Service, result, (Progressive elaboration)

when end of Project:
- ① objective is achieved
- ② terminated
  - objective Can't met
  - need not exist
  - Client wishes to terminate

⊛ Project VS operation
① Project: temperory - unique
② operation: Ongoing - Similary
(production, aCCounting, manufacture)

(Constrains)
Scope - Schedule - budget - Quality
Resource - Risk [PM, Iron triangle]

⊛ Project VS Program VS Portofolio

⊛ Program: group of (related) Projects, (Benefits) (Addvance) to be managed as a program.
Relation + benefit

⊛ Portofolio: Group of Programs Or Projects or Subprojects operations
may be (related Or Not) to achieve (Strategic) goal.
Add benefit, Risk Reduction, optimize use resources
[Centeralized Managment]

⊛ OPM [Organization Project Managment]
→ Framwork keep organization focus on strategy
OPM 3 [Organization project managment Maturity model]
Organization project managment Process
→ Examin enterprise Project managment Process

Strategic Goal
⊛ [Project managment office (PMO)]
⊛ Managment structure that standarize Project - related gouvernance ①, Facilate Sharing ② resources

- ① Supportive
  - Supportive [templates, training, lesson learned] Consultive.
  - (Low) degree Controll
- ② Controlling
  - Compliance
  - (Moderate) degree Control
- ③ Directive
  - Direct Manage
  - (High) degree Control

(Primary function: Support PM)
- shared resources
- develop methodology
- Coaching, training
- Monitor Compliance
- Develop, manage Polices
- Coordinat Communication

⊛ Organizational Structure [EEF]

Organz Strc / Characteristics	Functional	Matrix: weak	Matrix: balanced	Matrix: Strong	projectized
PM authority	little None	low	moderate	high	High Almost
Resource	little None	low	moderate	High	High Almost
who manage budget	Functional	Functional	Mixed	PM	PM
PM Role	Part time	Part time	(Full time)	Full time	full time
Adminst. staff	Part time	Part time	(Part time)	Full time	Full time

1- Projectized:
- Project team layout to project
- Communication more efficive
- Coordinate: (PM)

I (weak Matrix)
PM: maybe
⊙ Expiditor: Staff Assistance, Communication Coordinate
⊙ Coordinator: have Power make some Decision, report to high level

2- Functional: Each department work Separtely
- Each employee one manager
- Resource Central
- Employee more experience.
- Coordinate: functional manager.

⊙ Composite:
Functional organization Create Project شغل على الاتنين

OPA [Organizational Process Assets]
إجراءات خاصة بالشركة داخلية
- ① Process and Procedures
- ② Corporate knowledge base

EEF [Enterprise enviromental factors]
↳ Conditions Not under Control
- Infrastructure
- Company anthorization systs
- PMIS
- Political Climate
- Commercial Database
- Stakholder risk tolerance

⊛ Historical Information:
- Record of Past Projects used to Plan, manage







Project Governance:

oversight Function alligns with Project organization model and encompasses Project life cycle.

وظيفة اشرافية خلال دورة حياة المشروع تكون متوافقة مع الحوكمة التنظيمية تقدم لمدير المشروع والفريق

Organizational Governance:

System of rules and Practices and Process by which Company is directed and Controlled

نظام يضبط المنظمة لتنظيم العلاقات مع اصحاب المصلحة

Project life cycle (Project Phases)

- Series of phases from intiation to Closure
- PMI: ~~Eintiation~~ Start - Organize - Carry out - Close

تكملة لأنه مشروع لآخر

Characterestics:

لاحظ ال cost والتوظيف يبدأ قليل ثم يرتفع أثناء التنفيذ ثم يقل أثناء الاغلاق

① Cost, Staff

Cost & Staff

time

② Risk, Cost of Change



لاحظ ال risk، uncertainty بتكون عالي أول المشروع ثم يقل، تكلفة التغيير تكون منخفضة وتعلى خلال المشروع

Project Phase: Collection of logically related project activities that lead completion more deliverable.

Relationships:

1- Sequential: Phase start if previouse Complete

2- Overlapping: Phase start Prior Completion previous one.

لاحظ انتهاء مرحلة وبداية جديدة لها كذا اسم

Stage Gate, Milestone, Phase review, Phase gate, Kill Point

Project life cycle

Predictive [Fully Plan driven - waterfall]

- Scope, time, Cost determine early
- Change Scope Carefully

استخدامه:

1- Product well understand
2- Product required to be delived full
3- substantial base of industry practice

Iterative, incremental [Iteration]

- Repeat Project Activities understanding increase.
- require managment Process group each Iteration
- End of Iteration Deliverable will Complete

استخدامه:

1- organization manage Changing objective and scope
2- Partial delivery, value to Stakholder
3- Reduce Complexity

Adaptive [Chang driven, Agile]

- Same Iteration but very rapide
- every Chang Put in product backlog

استخدامه:

1- when dealing rapidly change.
2- requirment, scope deficult to define
3- when small improvement add value

Project Managment process [Process Group]

كل المشاريع لابد أن تقسيم على مراحلها، لتحسين عمليات

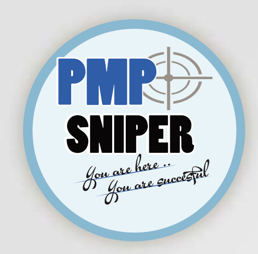
- Intiation - Planning - Monitor - Executing - Closing
- Process ensure effective flow of project through its life cycle

- **work performance Data:** Raw observation identified during activities. → (Ex) dates, measures, number of change Reques-
- **work performance information:** Performance data Collected From various process analyzed and integrated (Ex) implement Status, status of deliverable
- **work performance Report:** Physical or Electronic representation of work Performance information (Ex) status, memos, justification, notes Repor

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FramWork Project

- **Characteristics**
  - unique
    - Product
    - Service
    - result
    - improvement
  - Temperory
    - define begin and end
    - Succes – objectiv achived
    - fail – objective can't achiev / Need isn't exist
  - Progressive elaboration
  - different operation
  - ongoing – Similary
- **Constraints**
  - limitoptions
  - Scope
  - Cost
  - time
  - Quality
  - Resource
  - budget
- **PMO** ③
  - Project managment office
  - Facilate Sharing resources, methologies, tools
  - Provide project managment support
  - Supportive – Provid Consult – degree Control – Low
  - Control – degree moderate
  - Directive – take control on project – High
- VS Programs Portofolio
  - **Portofolio**
    - group of Programs or operations or projects related or Not related achiever Strategic business goal
    - Success Investment
  - **Program**
    - group of related projects, benefits
    - Program = relation + benefit
- **Project Manager**
  - responsible for achieving project objectives
  - Knowledge Performance
  - Personal
- **Organization Structure**
  - EEF
  - Functional
    - PM Authority – little
    - PM Part time
    - Advantages
      - Each employee one manager
      - resource Centeral
      - Employee much experience
    - Disadvantages
      - Project Cordination
      - Functional manager
  - Projectized
    - PM = high
    - Full time
    - Project team layout Project
    - Disadvantage – No Home to team
  - Matrix
    - every employee have 2 managers
    - weak – PM = low, Part time
      - PM May be Expeditor – Staf assistance – Communication Cordinator
      - or Coordinator – have power make Some decisions, report to high level manager
    - balanced – PM → Moderate – Full time
    - Strong – PM Auth high – Full time
    - PM give report FM
- **Organizational Process Assets – OPA**
  - Process and Procedures
  - Corporate knowledge base
- **Enterprise Environmental Factors – EEF**
  - Not under control
  - Culture
  - Geographic
  - Government
  - infrastructure
  - Market place
  - Commercial database
- **Stakeholder**
  - Sponsor
  - Customer
  - Seller
  - Organizational group
  - FM
- **Project team composition**
  - Part-time
  - Functional
  - Dedicated
  - Projectized
- **Projectlifecycle**
  - characteristics
  - Start ①
  - organize ②
  - carry out ③
  - Closing ④
- **Phase – to Phase RelationShip**
  - Sequential
  - overlapping
- **Project lifecycle**
  - Predictive
    - Fully plan driven
    - change scope carefully, Scope, time, ... early
    - Product well understood
    - where product required deliver full
  - Iteration
    - Repeat project
    - Org need mange Change
    - Reduce Complixty of
  - Adaptive
    - very Rapidly
    - when requirements difficult
    - when rapidly change
    - Change driven
    - Agile

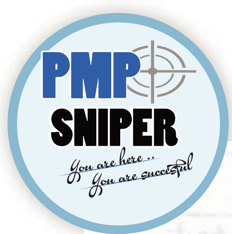


2

Project Integration Mangement

#Project_Integration_Mangement





2- Integration Managment (6) Process x (5) Phases

* Process and activities to identif, Combine, unify and Cordinat varios process

(1) Develop Project Charter [Intiation]

developing document that formaly authorizes existence project and provide PM authority to apply organization resources well defin project start and boundary.

Content:
Name, Purpose, budget, Cost, duration, high risk
High requirement, project success Criteria

Inputs	tools	output
1- Project statment of work 2- Business Case 3- EEF 4- OPA 5- Agreement	1- Expert judgment 2- facilation techniques	1- Project charter * Input in PM Plan

(1) Project statment of work
- (1) Product Description
- (2) Strategic Plan
- (3) Business Need

- for Internal project — Sponsor
- for External project — Customer

(2) Business Case
- (1) Business Need: market demand, organ need, Customer request, technology, Social need, Ecological impact
- (2) Cost Benefit Analysis: made by analyst, Done before start project

(3) Agreement: Contract, SIA, letter of intent, verbal agreement, Emails

Economic models for project Selection

1. Internal rate of return (IRR) — زى فوائد البنك الاعلى قيمة افضل
2. Present Value (PV) — قيمه النقود الان بالنسبه للمستقبل — $FV = PV (r+1)^n$
3. Net present Value (NPV) — طرح الفوائد من التكلف الاعلى افضل
4. Pay back Period — الوقت لاسترجاع النقود المستثمر، الاقل افضل
5. Benefit Cost ratio — مقارنه المصاريف المتوقعه للارباح المتوقعه الاعلى افضل

(2) Develop Project Managment Plan [Planning]

* Defining, Preparing, Coordinat Subsidiary plan and integrate them

Project managment Plan
- (3) Project baseline: Scope, time, Cost; Performance measurment baseline
- (9) KA Plan
- (4) Plans others: Change, Configuration, Process improvement
- Miscellaneous: Requirment

Kickoff Meeting
لاحظ قبل الـ kick لا تعتبر الخطه رسمية ولابد تم التوقيع عليها

Inputs	tools	Output
1- Project charter 2- output others (KA Plans, baseline) 3- EEF 4- OPA	1- Expert judgment 2- facilation techniques	1- PM Plan INPUT Direct, manage

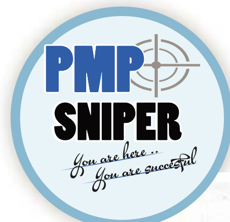
(3) Direct & Manage work [Executing]

leading & Performing the work defined in PM Plan

Input	tools	Output
1- PM Plan 2- Approved Change request 3- EEF 4- OPA	1- Expert judgment 2- Meeting 3- PMIS	1- Deliverables 2- Change request 3- work Performance data 4- PM Plan update 5- Project document update

PMIS: EEF, Provide tools, Schedule tool, work Authorization system, Configuration, Automated gathering and report (KPI)

* Deliverable: unique, typically tangible Complete to meet objectives
* Change Request: formal Proposal to modify any request



④ Monitor & Control Project work [Monitoring & Controlling]

Process of tracking, reviewing and reporting progress to meet performance

لاحظ: أي عملية Monitor الخرجات Plan و Change Request

Key benefit:
stackholder understand Current status of project

⊙ schedule forecast: drived from Progress against schedule baseline and estimate time (ETC) and schedule variance (SV) and (SPI)

⊙ Cost Forecast: drived from progress against Cost baseline and estimate to (ETC) and variance (CV) and (BAC) and (CPI) and Compare budget with (BAC)

⊙ validate Changes: Approved changes Required to validation to ensure Change Correct implement

⊙ Analytical technique: applied to Project managment to forecast outcome based on possible variance
- Regression Analysis [scatter diagram] علاقة بين متغيرين
- Root Cause Analysis.
- Reserve Analysis. عمل احتياطي
- Trend Analysis يقيس العلاقة بين متغير مع الوقت لتوقع المستقبل
- Earned value.
- variance Analysis حساب الفرق بين الفعلي والمخطط له

INput	Tools	output
1- PMPlan 2- Schedule forecast 3- Cost forecast 4- validate Changes 5- work Performance information 6- EEF 7- OPA	1- Expert judgment 2- Analytical technique 3- PMIS 4- Meeting	1- Chang Request 2- work performance Report 3- PMPlan updates 4- Project docume update

ملحوظة هامة جداً: يتم الموافقة أو الرفض على الـ Change Regest في عملية
→ Perform Integrated Change Control

لاحظ: هذه العملية تبحث عن الـ Deviation وتقترح حلول للمشكلات التي تظهر وتجعل أصحاب المصلحة على علم بما يحدث

خطوات عمل ⑧ Change
1- Prevent root Causes
2- Evaluate the impact
3- Identify options
4- Get Change request Approved or rejected
5- update Change log
6- update PM Plan, document
7- Communication Change with Stakeholder
8- Implement Approved Change.

⑤ Perform Integrated Change Control [Monitor & Control]

Reviewing all Change Requests approve / Reject Changes
- key benefit: document Changes, reduce risk which arise from change

ملحوظة هامة ← الـ Change Request
① Corrective Action — نتعامل مع ما حدث فعلاً ونتخذ إجراءات لجعل المستقبل يسير وفق الخطة
② Prevention Action — إجراء وقائي أو استباقي يتم توقع الانحراف ونأخذ إجراء لجعل المستقبل كالخطة
③ Defect Repaire — إعادة العمل من الأساس لإصلاح المشكلة

INput	tools	output
1- PMPlan 2- work Performance Report 3- Change Request 4- EEF 5- OPA	1- Expert judgment 2- Meeting 3- Change Control tools	1- Approved ChangeRequest 2- Change log 3- PMPlan update 4- Project document update

- Change Control tool:
Manual or automated tools may be used

- Change ~~list~~ Log: document changes and their impacts Although Approved or Rejected

ملحوظة: ما هو Change Control board (CCB)؟
→ PM, Customer, Sponsor, Expert and Functional manager

⑥ Close Project Or Phase [Closing]

⊙ finalizing all Activities cross Project formally Complete
Key benefits:
- lessons learned
- Formal ending
- Release Resources

⊙ Accepted Deliverable: From Validate scope

⊙ Final product: Transition final product that project Authorized to Produce.

ملحوظة: بدون الـ lessons learned المشروع غير مكتمل

INput	Tools	Output
1- PMPlan 2- Accepted Delivery 3- OPA	1- Expert Judgment 2- Analytical techniques 3- Meeting	1- final product or result transition 2- OPA updates

خطوات الإغلاق ⑨
1- All project work Complete and met objectives
2- Complete Procurment Closure.
3- Final acceptance of product
4- Complete financial Closure.
5- Hand off Complete product
6- Final Performance Report.
7- Index, archive Records
8- final lessons learned.
9- team assesment and release resources

Integretion Managment

Intiation

① Develope Project Charter
- IN
  - ① Project statement of work
    - ① Business need
    - ② Product Description
    - ③ StrategicPlan
  - ② Business Case
    - ① Business Need
      - market demand
      - Customer request
      - Social need
      - legal requirment
    - ② Cost Benefit Analysis
  - ③ Agreement - Contract - Email - Letter of intent - written
  - ④ EEF
  - ⑤ OPA
- TT
  - ① Expert Judgment
  - ② Facilitation techniques [BrainStorm, Problem solve, meeting, Conflict resolution]
- OUT
  - Project Charter
    - High level managment
    - Name - Purpose
    - Cost - budget
    - Success Criteria
    - Constrains

Planning

② Develope Project managment plan
- IN
  - ① Project Charter
  - ② Input from other Process
  - ③ OPA
  - ④ EEF
- TT
  - ① Expert Judgment
  - ② Facilition techniques
- Out
  - Project Managment Plan
    - ① 3 baseline: Scope, time, Cost
    - ② 9 KA Plans
    - ③ 4 other Plans: Change, Configuration, Requirment, improvement
    - ④ Misc. llaneous

Execution

③ Direct & Manage Project work
- IN
  - ① Project management Plan
  - ② Approved Change request
  - ③ EEF
  - ④ OPA
- TT
  - ① Expert Judgment
  - ② PMIS
  - ③ Meeting
- Out
  - ① Deliverables: unique, tangible, meet Project objectives
  - ② work performance data
  - ③ Change Request
  - ④ PM Plan updates
  - ⑤ Project document updates

Monitor & Control

④ Monitor & Control Project work
- IN
  - ① PM Plan
  - ② Schedule Forecast
  - ③ Cost forecast
  - ④ Validate Changes
  - ⑤ work performance information
  - ⑥ EEF
  - ⑦ OPA
- TT
  - ① Expert judgment
  - ② PMIS
  - ③ Meeting
  - ④ Analytical techniques: Variance, Evm, trend, Root Cause Analysis, Reserve Analysis, Scatter diagram [regression analysis]
- out
  - ① Change Request
  - ② work performance Report
  - ③ PM Plan update
  - ④ Project document updates

⑤ Perform Integrated Change Control
- IN
  - ① PM Plan
  - ② work Performance Report
  - ③ Change Request
    - ① Corrective Action
    - ② Prevention Action
    - ③ Defect Repair
  - ④ EEF
  - ⑤ OPA
- TT
  - ① Expert judgment
  - ② Meeting
  - ③ Change Control System
- Out
  - ① Approved Change Request
  - ② Change log
  - ③ PM Plan updates
  - ④ Project document updates

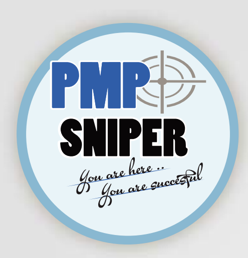
⑧ Change steps
1. Prevent root causes
2. Evaluate impact
3. Identify options
4. Get Change request Approved or reject
5. update Change log
6. update PM Plan
7. Communicate stakeholder
8. Implement Approved change

Closing

⑥ Close Project or phase
- IN
  - ① PM Plan
  - ② Accepted Deliverable
  - ③ OPA
- TT
  - ① Expert judgment
  - ② Analytical technique
  - ③ Meeting
- out
  - ① Final Product
  - ② OPA update

⑨ Closing steps
1. All project work completed and meet objectives
2. Procurement Closure
3. Final acceptance of product
4. Complete financial closure
5. Hand off Complete product
6. find Performance Report
7. Index, Archive Records
8. final lessons learned
9. team assessment and release resource

Yasser Elzanouny



3

Project Scope Managment

#Project_Scope_Managment



3- Scope Managment — 6 Process x 2 Phase

⊛ Scope managment:
includes all process required to ensure the project include All work required and only work required.

⊙ Product scope: features, functions that Characterized a product service

⊙ Project scope: work performed to deliver a product, service with specific features.

⊛ ملحوظة: project scope تحتوي Product scope

1 Plan Scope Managment (Planning)

⊛ Creating scope managment plan that document how project work will be defined.
→ Provide guidence, direction how scope will be managed

Input	tools	out put
1- PM Plan 2- Project Charter 3- EEF 4- OPA	1- Expert judgment 2- meeting	1- Scope Managment Plan 2- Requirement Mangment Plan

⊛ Scope Managment plan: Process of Prepar Project Scope statment
- enables Creation of WBS

⊛ Requirment Managment plan:
Describe How requirment will be analyzed
Requirment Prioritize.

2 Collect Requirments (Planning)

⊛ Determin, document and manage Stakeholder Needs to achieve Project objectives

Input	tools	output
1- Scope managment Plan 2- Requirments managment Plan 3- Stakeholder managment Plan 4- Project charter 5- stakeholder register	1- Interview 2- Focus group 3- Facilited workshop 4- Group Creativity techniques 5- Group Decision Making technique 6- Questionair and Survey 7- Observation 8- Prototype 9- BenchMarking 10- Context diagram 11- Document Analysis	1- Recurments Documentation 2- Requirments tracibility Matrix

⊛ Stakeholder managment plan:
understand stakholder Communication requirment

⊙ Interviewing: مقابلات فردية

⊙ Focus group: malerator + مقابلات جماعية

⊙ Facilited workshop: مقابله العنصر المتقاربين، جهات التطوير تحقيق توافق، تعرف المشاكل بأكثر build trust, Quickly

Ex: Softwar JAD & user stories — Role-Goal Motivation
Manufacture VOC, QFD

⊙ Group Critivity technique → large Number into groups, time
Brain Storm, MindMap, Affinity diagram, Multidecision analysis: utilize decision matrix
Noaminal Group: Enhance brainstorm Voting, Rank

3 Define Scope (Planning)

⊛ Process of developing a detailed description of Project and product
→ it describe project, service, result boundaries

INput	tools	output
1- Scope managment Plan 2- Project Charter 3- Requirments Documentation 4- OPA	1- Expert judgment 2- Product Analysis 3- Alternative generation 4- Facilated workshop	1- Project scope statment 2- Project document update

⊛ Product Analysis:
translate high level description into tangible deliverable

⊛ Alternative Generation: Develop many Potential options as possible to identify different Approach

⊛ Project scope statment: Accepted Criteria, Constrains, Assumptions, Deliverable, Product description

⊛ Requirment tracibility Matrix: Grid link requirment their origin, help ensure each requirment business value track

⊛ Requirment Documentation: Describe how requirment meet business need, measurable, testable, Complete, Consistent, accepted, unambiguous

⊛ Project Scope statment: Product description, Deliverable, Accepted Criteria, Constrains, Assump

⊙ Document Analysis: analyzing existing document and identifying information

⊙ Context Diagram: Show inputs → output
[ ] → [ ] → (out)

⊙ Benchmarking: Compare Planned to other organization
Reduce team Creativity

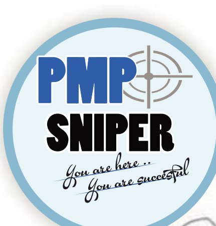
⊙ Prototype: Model, Mock up, Story board
tangible ملموس

⊙ Questionair & Surveys: large Number geography dispread, Statical analysis Quickly

⊙ observation, job Shadow:
Direct way, difficult understand
نزع لقد معهم من الشركه ونتابع

⊙ Group Decision Making:
unimity, majority, plurity, Dictatoship
100% — 50٪ < — نسبة متقاربة — شخص واحد لصنع قرار

⊙ Delphi technique
anonymouse
Facilator, Consus reached few round
Reduce Bias



#Scope_Managment 3

4 Create WBS (Planning)

* Work break down Structure: hierarcial decomposition of total Scope of work and Create required deliverable
* Subdiving Project Deliverable into Smaller, more managable

there Control Account → unique identifier, A code of Account

* 100% Rule: Nothing is left out and No extra work is Performed.

INput	tools	output
1- Scope managment Plan 2- Project Scope Statment 3- Requirment Documents 4- EEF 5- OPA	1- Decomposition 2- Expert judgment	1- Scope baseline 2- Project Document updates

* DeComposition: technique dividing project Scope, deliverables into smaller
* Scope baseline: Approved version of Scope statment, WBS, WBS Dictionary

Scope baseline = Scope statement + WBS + WBS Dictionary

5 Validate Scope (Monitor & Control)

* Formalizing acceptance of Complete project deliverable

→ Acceptance process, increase the chance of final product

Direct & Manage → Deliverable → Control Quality → Verified Deliverable →

Validate Scope → Accepted Deliverable → Close Project → Final Product

INput	tools	Output
1- PM Plan 2- Requirments Documentation 3- Requirment traCibility Matrix 4- Verified Deliverable 5- Work Performance Data	1- Inspection 2- Group decision Making technique	1- Accepted deliverable 2- Change Request 3- Work Performance information 4- Project document updates

* Inspection: audit, walkthrough, reviews, product review measuring, Examing and validating to determine work meet requirment
* Accepted deliverable: Deliverable meet acceptance Criteria formally

6 Control Scope (Monitor & Control)

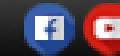
* Monitoring Status of Project Scope and managing changes to Scope baseline

→ allow Scope baseline to be maintained through project

* Gold plating: Extra work for Customer satisfication.
* Scope Creep: unControlled change in Scope

INput	tools	output
1- PM Plan 2- Requirments Documents 3- Requirment tracibility Matrix 4- work performance Data 5- OPA	1- Variance Analysis	1- work Performance information 2- Change Request 3- PM Plan updates 4- Project document updates 5- OPA update

* Variance Analysis: → technique determin Cause, degree of difference between baseline and Actual performance and decide Corrective, Preventive required



PMP SNIPER
You are here... You are succesful

Scope Managment

Yasser Elzanouny

Definitions
- what is first include work performed to deliver product
- Projects include (a) work and only
- Project scope managment
- Scope
- Product: Features, function of product
- Project
- Scope basline
- Project statment + WBS + WBS Dictionary

(1) Planning

(1) Plan Scope Management
- IN
  - (1) Project manag plan
  - (2) Project charter: high level and Project statment of work
  - (3) EEF: Cultur, Market
  - (4) OPA: Policies + lessons learned
- TT
  - (1) Expert judgment: specialized
  - (2) Meeting: any responsible
- Out
  - (1) Scope Mam plan: Provide how scope managed
  - (2) Requirmen Plan: how manage activ, priority

(2) Collect Requirment
- determin, docum, manag Stakholder Needs
- Provide basis for managing Project scope
- IN
  - Scope man plan
  - Project charter
  - Requir Plan
  - Stack Plan
  - Stack Register
- TT
  - (1) interview
  - (2) Focus groups: moderator
  - (3) Facilitated group
  - (4) Group Creativity technique: Brainstorm, Normin group techni, Mind Map, Affinity Diagram, Multi Decision analysis
  - (5) Group Decision Making tech: Unanimity, Delphi (reduce bias, Anonymously), Majority, Plurality, Dictator
  - (6) Survey
  - (7) Observation: Job shadow
  - (8) Prototype: tangible model
  - (9) Benchmarking
  - (10) Context diagram: Process
  - (11) Document Analysis
- Out
  - Requirment Document: Business, Stack, Solution, Transition, Project, Quality
  - Requir Tracibility Matrix: Grid origin and requirment

(3) Define Scope
- develop detailed description
- describe product
- IN
  1. Scope Management plan
  2. Project charter
  3. Requirment Document
  4. OPA
- TT
  - Facilated workshop
  - Alternative Generation: develop as many potential options
  - Product Analysis: translate high level description into tangible
  - Expert judgment: analyze information needed to develop project scope statement
- Out
  - (1) Project scope statement: description project scope + deliverable + Assumption + Constrains; acceptance criteria; project exclusion
  - (2) Project document update

(4) Create WBS
- hierarchical decompos
- IN
  - Project scope statement
  - Requirment Document
  - Scope managment plan
  - EEF
  - OPA
- TT
  1. Decomposition
  2. Expert judgment
- Out
  1. Scope baslin = Project scope statement + WBS + WBS Dictionary
  2. Project document update

(2) Monitoring & Controlling

(5) Validate Scope
- Formalizing acceptance of deliverables
- Direct Project work → Deliverable → Control Quality → Verified Deliverables → Validate Scope → Accepted Deliverable → Close the project → Final Product
- IN
  - Project plan
  - Requirment documentation
  - Requirment traceability matrix
  - Verified deliver
  - work performance data
- TT
  - Inspection: measure, exam, test, validate; review = Audit = walkthrough
  - Group Decision making technique
- Out
  - Accepted deliverable: Deliverable meet Acceptance Criteria formally
  - Change Request
  - work performance info
  - Project document updates: status

(6) Control Scope
- monitoring status of project
- Allow scope basline maintained through project
- Scope creep: uncontrolled expansion without Adjustment time
- Scope basline: used for comparison, validate & control; changed formal change control
- IN
  - Project manag plan
  - Requirment documentation
  - Requirment traceability matrix
  - work performance data
  - OPA
- TT
  - Variance Analysis: degree difference; variance = planned vs Actual
- Out
  - work performance info
  - Change request
  - Project manag plan update
  - Project document update
- Integrated change control: defect repair



4

Project Time Managemnet

#Project_Time_Managment



Project Time Managment
7 Process x 2phases

⊛ Process required to manage the timely Completion of the project.

① Plan Schedule Managment (Planning)

INput	tools	output
1- PMP lan 2- Project Charter 3- EEF 4- OPA	1- Expert judgment 2- Analytical technique 3- Meeting	1- Schedule Managment Plan

⊛ schedule Managment plan: may include: - Methodology, level of Accuracy units of mesure, Reporting Formate, Process description

② Define Activities (Planning)

⊛ Identifying and doCumenting specific Action to produce Project deliverables

INput	tools	Out put
1- Schedule Mangment Plan 2- Scope baseline 3- EEF 4- OPA	1- DeComposition 2- Rolling wave Planning 3- Expert judgment	1- Activity list 2- Activity Attributes 3- ~~Activity~~ Milestone list

⊛ DeComposition: technique divide Project Deliverables into smaller more managable (Activities), efforTneed to complete Work Pakages

⊛ Rolling wave Planning: Near term Planned in detail, future planned higher level.

⊛ Activity list: list All Schedule Activities, each Activity unique title.

⊛ Activity Attributes: all available details of Activity relationships. ID, WBS ID, Name, Codes, describtion, relationships.

⊛ Milestone list: Significant Point or event, Mandatory, OPtional, have Zero duration, moment in time.

③ SequenCe Activies (Planning)

INput	tools	output
1- Schedule managment Plan 2- Activity list 3- Activity Attributes 4- Milestone list 5- Project Scope statment 6- EEF 7- OPA	1- Precedence diagram method (PDM) 2- DependenCy determination 3- leads, lags	1- Project Schedule Network Diagram 2- Project document updates

⊛ PDM: (A-O-N): Schedule model Activities represents by nodes and graphically linked one or more relationship S [A] F → S [B] F

⊙ Logical Relationships:
- 1- FS successor Can't start until Predessor finish
- 2- FF successor Can't Finish until Predessor finish
- 3- SS successor Can't start until Predessor Start
- 4- SF successor Can't finish until predessor Start

⊛ Dependency Determination: 1- Mandatory (legal, Contract) 2- Discretionary (soft logic, Prefered, Preferential) 3- External 4- Internal

⊛ leads, lags: ① lag (waiting time) successor Activity delay to Predecessor Activity
② lead successor Activity advanCe to Predecessor

⊛ Project schedule Network diagram: Graphical Representation of logical Relationship, refer dependencies
بيوضح العلاقات بين الأنشطة وترتيبها

④ Estimate Activity Resources (Planning)

⊛ Estimate type, Quantity of material, HR, equipment required Perform each Activity.

INput	tools	output
1- Schedule managment Plan 2- Activity list 3- Activity Attributes 4- ResourCe Calender 5- Risk Register 6- Activity Cost estimate 7- EEF 8- OPA	1- Expert Judgment 2- Alternative analysis 3- Published estimated data 4- Bottom up estimate 5- Project managment software	1- Activity resource Requirment 2- Resource breakdown Structure 3- Project document updates

⊛ Alternative analysis: البدائل للتنفيذ

⊛ Published estimating data: Organization Publish rates, unit Costs of resources.

⊛ Bottom up estimate: method estimate duration, Cost by estimate lower level of WBS.

⊛ RBS: Hierarchal representation of resources by Category, type

⊛ Activity Resource Requirment: identify type, Quantity of resource Activity



(5) Estimate Activity Duration — Planning

⊛ estimating the number of work Periods needed to Complete individual activities.

Input	tools	Output
1- Schedule managment Plan	1- Expert judgment	1- Activity duration estimates
2- Activity list	2- Analogous estimate	2- Project doCument updates
3- Activity Attributes	3- Parametric estimate	
4- Activity resourCe requirment	4- three point estimate	
5- Project Scope statment	5- Group Decision making techniques	
6- Resource Calender	6- Reserve Anaysis	
7- Risk Rigister		
8- RBS		
9- EEF		
10- OPA		

⊛ Analogous Estimate [top-down]:
Applicable Cost, time estimate use expert and historiCal informat to prediCt future
- Put in project charter
- تستخدم في حالة عدم وجود معلومات كافية

⊛ ParametriC Estimate:
Algorithm use CalCulate Cost, time
StatiCal relationShip between historiC and variables
HeuristiCs, accepted rule, best practice, Rule of thumb

⊛ Reserve Analysis:
Contingency Reserve, time reserve, Buffer
with inCludes Schedule baseline

⊛ Activity duration Estimates:
Quantitative assessments of likely number of time Period that required
⊙ Not include lags or lead

⊛ three Point Estimate: (Pert)
- triangle Distribution (Simple Average) $= \frac{O+M+P}{3}$
- Beta Distribution (weighted Average) Pert $= \frac{O+4M+P}{6}$ $SD = \frac{P-O}{6}$

(6) Develope Schedule — Planning

⊛ Analyze activity sequence, duration, resource requirment, schedule Constrains to Create schedule model

Input	tools	output
1- Schedule managment Plan	1- Schedule Network Analysis	1- Schedule baseline
2- Activity list	2- Critical path method	2- Project Schedule
3- Activity Attributes	3- Critical Chain method	3- Schedule Data
4- Project Schedule Network diagram	4- Resource Optimization techniques	4- Project Calender
5- Activity resource requirment	5- Modeling techniques	5- PMPlan updates
6- Resource Calender	6- leads and lag	6- Project doCument update
7- Activity duration estimate	7- Schedule Compression	
8- Project Scope statment	8- Schedule tool	
9- Risk Register		
10- Project staff assignment		
11- Resource breakdown structure		
12- EEF		
13- OPA		

⊛ Critical Path methode: (CPM)
used to estimate minimum Project duration and determine Schedule flexibility
⊛ الطول مسار للأنشطة ويحدد أقصر مدة يمكن تنفيذ المشروع بها.

⊛ Critical Activity:
نشاط لو تأخر يؤدي لتأخر المشروع تكون قيمة TF = 0

⊛ free float:
الوقت المسموح للنشاط بتأخيره بدون تأثير على البداية المبكرة للنشاط التالي — البداية التالي والتالي
$FF = ES - EF$

⊛ total float:
الوقت المسموح للنشاط بتأخيره بدون تأثير على المشروع الكلي
$TF = LS - ES$

⊛ Critical Chain method: Add Resource dependencies to Schedule, build buffer [reserve] For resour limitation
تأخذ محدودية الموارد في الاعتبار

⊛ Resource optimization Techniques: ⊙ Resource leveling: balancing demand of resource with available supply
لكنه يطول Extend schedule
⊙ Resource smoothing: Critical path Not changed
تستغل نقط الـ float & free, total للأنشطة غير الحرجة

⊛ Modeling Techniques: ⊙ what if anaysis: evaluate scenariose to Predict their effect
عمل سيناريوهات ودراسة تأثيرها
⊙ Simulation: Calculating multiple project duration with different set, using Probability distribution (Monto Carlo)

⊛ Schedule Compression: Technique shorten schedule duration without reducing project scope.
⊙ Fast tracking: Perfor Parallel instead of sequence may rework or increase risk.
⊙ Crashing: adding resource but increase Cost

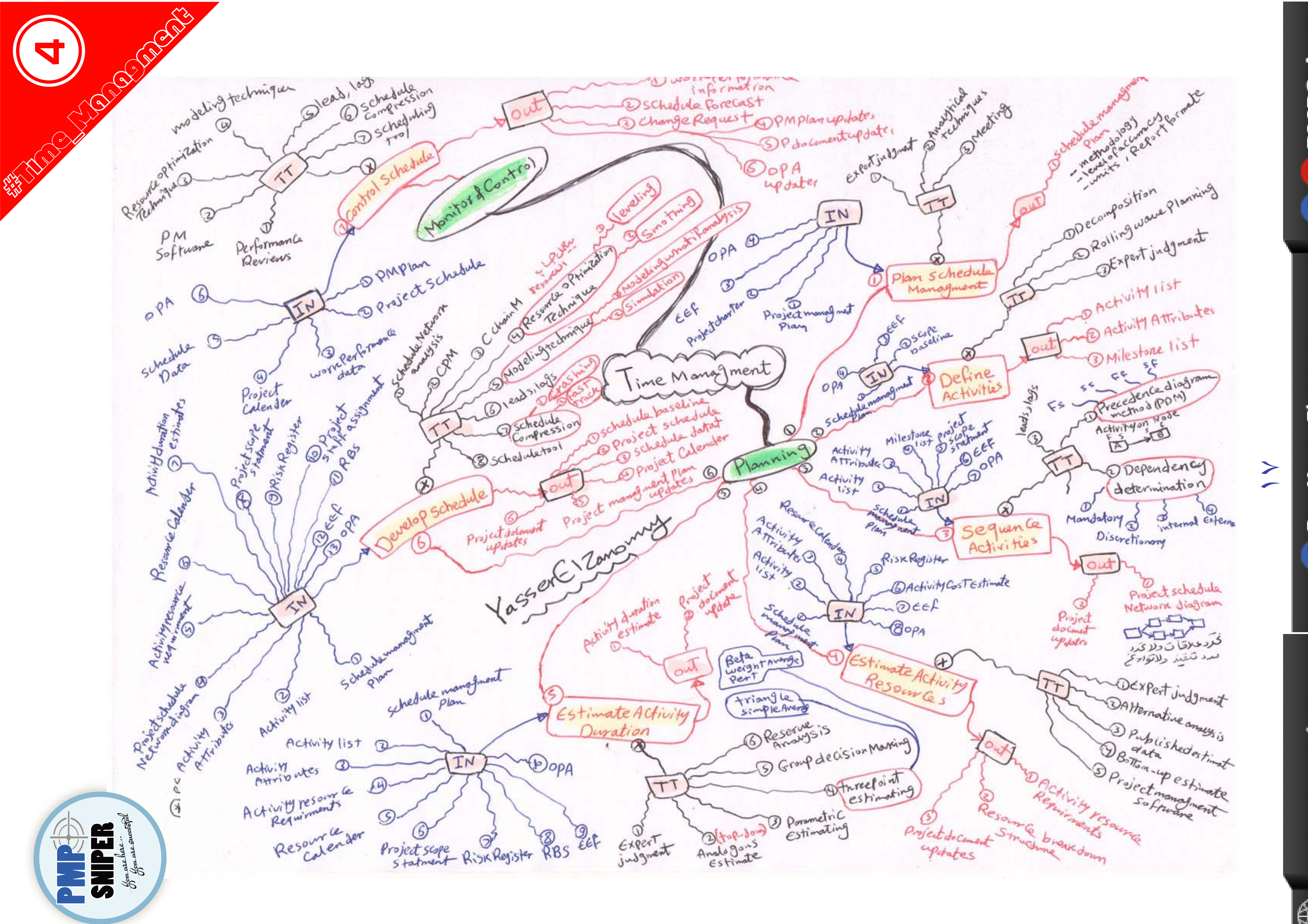
⊛ Schedule baseline: Approved version of schedule model
⊛ Project schedule: Present linked activities with planned dates
⊙ Barchart: Gantt: Not include resources but easy read.
⊙ Milestone shart: suitable for managment Report

(7) Control Schedule — Monitor & Control

Input	tools	output
1- PMPlan	1- Performance review	1- work Performance information
2- project schedule	2- PM Software	2- Schedule forecast
3- work performance data	3- Resour optimization technique	3- Change requests
4- Project Calender	4- Modeling technique	4- PMPlan updates
5- Schedule data	5- leads, lag	5- Project doCument updates
6- OPA	6- Schedule Compression	6- OPA updates
	7- Scheduling tool	

⊛ Performance Reviews: measure, Compare, analyze schedule Performance
→ Trend analysis: تحليل الأداء بالنسبة للوقت
→ Critical path → Earned value

⊛ Schedule Forecast: estimates of Conditions, events in Project Future based on information and knowledge available at the time.


#Time_Managment
4
Time Managment
Planning
Monitor & Control
Control Schedule
Plan Schedule Management
Define Activities
Sequence Activities
Estimate Activity Resources
Estimate Activity Duration
Develop Schedule
YasserElZanouny
IN
TT
out
Schedule forecast
Change Request
PMPlan updates
P documentupdates
OPA updates
Expert judgment
Analytical techniques
Meeting
Schedule management Plan
Decomposition
Rolling wave Planning
Activity list
Activity Attributes
Milestone list
Precedence diagram method (PDM)
Activity on Node
Dependency determination
Mandatory
Discretionary
internal
External
leads, lags
Project schedule Network diagram
Project document updates
Expert judgment
Alternative analysis
Published estimate data
Bottom-up estimate
Project management Software
Activity resource Requirements
Resource breakdown Structure
Reserve Analysis
Group decision Making
Three point estimating
Parametric Estimating
Analogous Estimate
Triangle simple Average
Beta weight Average Pert
Activity duration estimate
Schedule Network analysis
CPM
C chain M
Resource optimization Technique
Modeling technique
leads, lags
Schedule Compression
Schedule tool
Leveling
Smoothing
Simulation
Schedule baseline
Project schedule
Schedule data
Project Calender
Project management Plan updates
PMPlan
Project Schedule
Work Performance data
Schedule Data
OPA
PM Software
Performance Reviews
Resource optimization Technique
modeling technique
lead, lags
Schedule compression
Scheduling tool
Project scope statment
Risk Register
Project staff assignment
RBS
EEF
Project charter
Project management Plan
Resource Calender
Activity resource requirement
Project schedule Network diagram
Activity Attributes
Activity list
Activity Cost Estimate



5

Project Cost Management

#Projec_Cost_Managment



Cost Managment

4 Process x 2 phase

⊛ include process Planning, estimating, budgeting, financing, managing and Controlling Cost.

① Plan Cost Managment — Planning

⊛ Process establish policies, Procedures and documentation for planning, managing, Control project cost

INput	tools	Output
1- Project managment plan 2- Project Charter 3- EEF 4- OPA	1- Expert judgment 2- Analytical techniques 3- Meeting	1- Cost managment Plan

⊛ Analytical techniques:
Develop CMplan Choosing strategic options to fund the project such: Self funding, funding with equity

⊛ Cost Managment Plan:
May include:
- level of Accuracy
- units of mesure
- Control thresholds
- Reporting format
- Rules Performance measurment

② Estimate Cost — Planning

⊛ developing an approximation of the monetory resources needed to Complete project Activities
→ determine amount of Cost required to Complete Project work.

⊙ Rough order of magnitud (ROM): in intiation −25% → 75%

⊙ Definitive estimates: Next phases −5% → 10%

INput	tools	output
1- Cost managment plan 2- HR managment plan 3- Scope baseline 4- project schedule 5- Risk Register 6- EEF 7- OPA	1- Expert judgment 2- Analogous estimate 3- Parametric estimate 4- Bottom up estimate 5- 3 Point estimate 6- Reserve analysis 7- Cost of Quality 8- Project managment software 9- vendor bid analysis 10- Group decision making Techniques	1- Activity Cost estimate 2- Basis of estimate 3- Project document updates

Types of Cost:

⊙ Direct: تكلفه مباشرة للمشروع، رواتب العاملين، المواد الخام مثل المياه يشربها الموظفين.

⊙ Indirect: تكلفه لا يمكن تخصيصها للمشروع واحد لكن اكثر من مشروع تكلفه صيانة المكتب الرئيسي تكلفه مدير عام مشروعات لاكثر من مشروع.

⊛ Cost of Quality: عمل مقارنه بين تكلفه الالتزام بالجودة وتكلفه إعادة العمل في حالة عدم الالتزام بالجودة

⊛ vendor bid analysis: دراسه وتحليل ومقارنه عروض المقاولين وستتم تكلفه ممكن تغييرها تكلفه تقريبية.

⊛ Activity Cost Estimate: Quantitive assessement للتكلفه المتوقعة للنشاط ويجب إدخال كل شئ خامات معدات واى تكاليف اخرى.

⊛ Basis of estimate: كتابة الاسس التى تم تقدير التكلفه بواسطتها.

③ Determine Budget — Planning

⊛ Process of Aggregation estimated Costs of individual activities or workpackages to establish authorized Baseline.
→ Determine Cost baseline against Project performance

INput	tools	output
1- C Managment Plan 2- Scope baseline 3- Activity Cost estimates 4- Basis of Estimates 5- Project schedule 6- Resource Calender 7- Risk Register 8- Agreements 9- OPA	1- Cost Aggregation 2- Reserve Analysis 3- Expert judgment 4- Historical relationships 5- funding limit reconiliation	1- Cost baseline 2- Project funding requirments 3- Project document updates

⊛ Cost Baseline = Project Cost + Contingency Reserves

⊛ Project Budget = Costbaseline + Managment Reserves

⊛ Historical Relationships: such analogous + Parametric

⊛ Funding limit Reconciliation: Funding limit big risk. variance between funding limits and Planned expenditures Sometime Cause rescedule of work.

⊛ Project Funding Requirments: Periodic Funding requirment drived from Cost baseline Apperas steps

S Curve



(4) Control Cost — Monitor & Control

- AC [Actual Cost]: التكلفه الفعلية التى تم صرفها لوقت معين
- PV [planned value]: التكلفه المخطط لها حتى وقت معين
- EV [Earned value]: القيمه المخططه للاعمال التى تم تنفيذها
- BAC [budget at Completion]: التكلفه الكلية المخططه للمشروع
- EAC [Estimate at Completion]: التكلفه الكلية المتوقعه طبقاً للاداء الحالى
- ETC [Estimate to Completion]: التكلفه الكلية المتبقيه للمشروع طبقاً للاداء الحالى
- VAC [Variance at Completion]: الفرق بين التكلفه المخطط لها وبين التكلفه المتوقعه طبقاً للاداء الحالى
- CV [Cost variance]: فرق التكلفه — over budget ⇐ − , + = under budget
- CPI [Cost Performance index]: مؤشر اداء التكلفه
- SV [Schedule Variance]: فرق الجدول الزمنى — behind schedule − , + = ahead of schedule
- SPI [schedule Performance index]: مؤشر اداء الجدول الزمنى
- TCPI [to Complete Performance Index]: ماهو المعدل المفروض اكمل بيه عشان المشروع ينتهى بالتكلفه المخططه

$$CV = EV - AC \qquad CPI = \frac{EV}{AC}$$

$$SV = EV - PV \qquad SPI = \frac{EV}{PV}$$

$$EAC = AC + ETC$$

$$EAC = AC + [BAC - AC]$$

$$EAC = AC + \left[\frac{BAC - AC}{CPI * SPI}\right]$$

$$EAC = \frac{BAC}{CPI}$$

- $ETC = EAC - AC$
- $TCPI = \frac{BAC - EV}{BAC - AC}$
- $VAC = BAC - EAC$

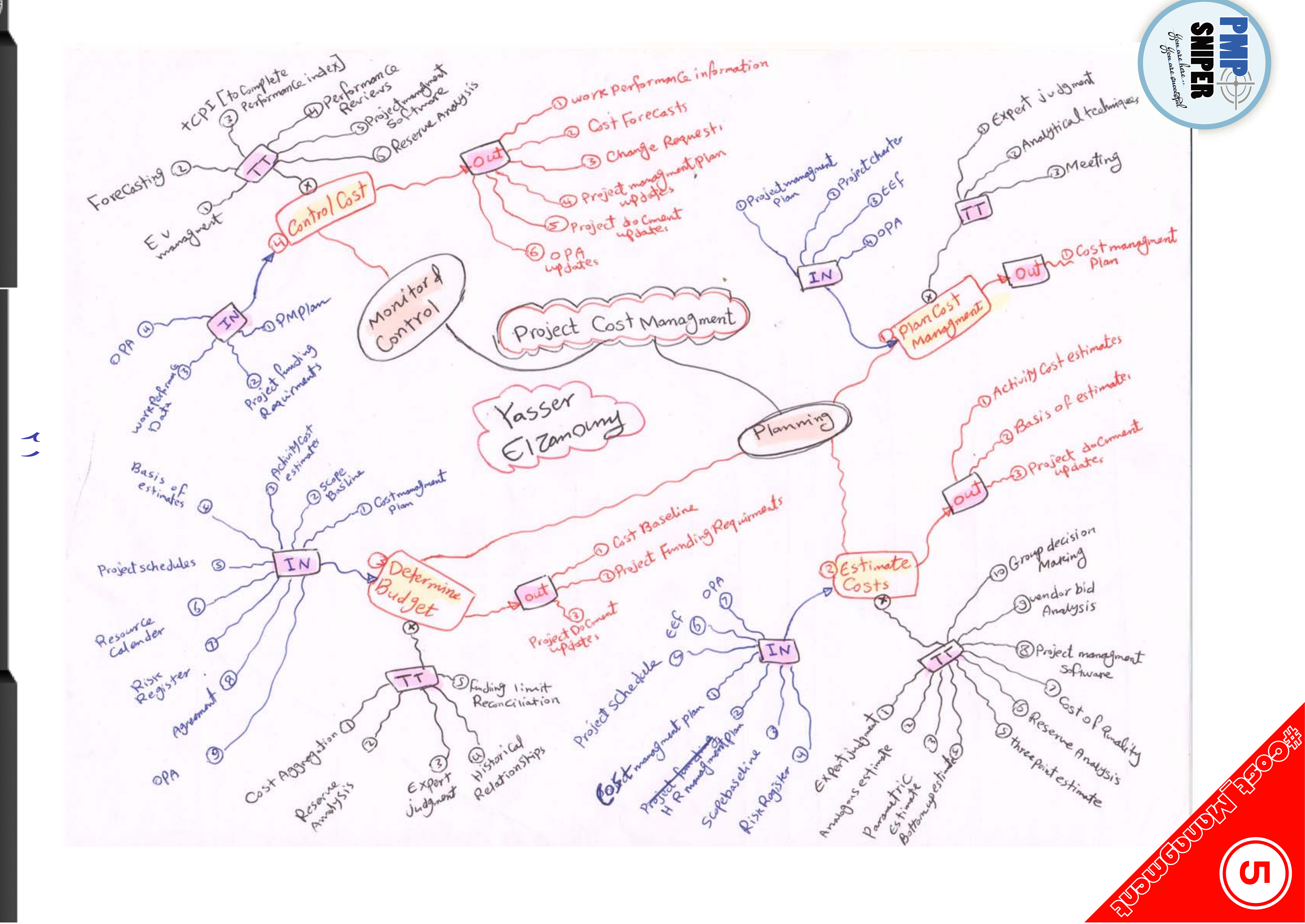
→ Control Cost

- Process of monitoring status of project, update project costs and managing changes to cost baseline
  → recognize variance from plan in order to take correction action and minimum Risk

Input	tools	output
1- Project managment plan	1- EV managment	1- work performance information
2- project funding requirments	2- Forecasting	2- Cost Forecasts
3- work performance data	3- TCPI	3- Change Requests
4- OPA	4- Performance Review	4- PMPlan update
	5- Project managment Software	5- Project document update
	6- Reserve Analysis	6- OPA updates

- Cost Forecast: Calculate EAC value or bottom up value is documented and communicated to stakholders

- Earned value Managment: Methodology that Combine scope, schedule and resource measurment to assess project performance, progress
  → produce performance Baseline
- Forecasting: Ex: EAC
- TCPI: Cost Performance is required to Achieve with remaining resources in order to meet specified managment goal.
- Performance Review: Compare Cost performance over time Ex: Trend, variance Anaysis, EVM

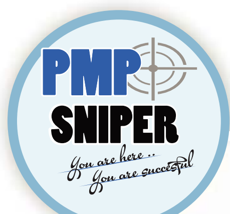

Project Cost Managment
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Bottom up estimate
⑤ three point estimate
⑥ Reserve Analysis
⑦ Cost of Quality
⑧ Project managment Software
⑨ vendor bid Analysis
⑩ Group decision Making
Out
① Activity Cost estimates
② Basis of estimates
③ Project document updates
Determine Budget
IN
① Cost managment plan
② Scope Basline
③ Activity Cost estimates
④ Basis of estimates
⑤ Project schedules
⑥ Resource Calender
⑦ Risk Register
⑧ Agreement
⑨ OPA
TT
① Cost Aggregation
② Reserve Analysis
③ Expert judgment
④ Historical Relationships
⑤ funding limit Reconciliation
Out
① Cost Baseline
② Project Funding Requirments
③ Project Document updates
Monitor & Control
Control Cost
IN
① PMPlan
② Project funding Requirments
③ work performance Data
④ OPA
TT
① EV managment
② Forecasting
③ TCPI [to Complete Performance index]
④ Performance Reviews
⑤ Project managment Software
⑥ Reserve Analysis
Out
① work performance information
② Cost Forecasts
③ Change Requests
④ Project managment plan updates
⑤ Project document updates
⑥ OPA updates



6

Project Quality Management

#Project_Quality_Managment





Project Quality Managment

Process to determine Quality Policies, objectives that statisfy Needs it was undertaken

⊛ Quality: digree which set of inherent Characteristics Full Fill requirments

⊛ Grade: design intent is a category assign to deliverables have same functions but different technical

Responsabile For Quality: ultimate to Project Manager

⊛ Total Quality managment (TQM): Phisology enCourage Company to focus find way to Continous improve.

⊛ Marginal Analysis: Point where benefits be recived from improving Quality equal incremental Cost to achieve that quality

⊛ just-in-Time [JIT]: Zero inventory

→ josph Duran → Quality is fitness for use

⊛ Impact Poor Quality: increase Cost, Decrease profit, low moral, low Customar Saitisfication, Rework.

⊛ Continous Improvment: Kaizen تحسين مستمر صغير و لكن مستمر, ~~defe~~ ، Deming أبوها → Plan-Do-Check-Act

PDCA Cycle [Plan-Do-check-Act]: Shewhart أبوها

⊛ Accuracy: مدى القرب من القيمة

⊛ Precision: النتائج متقاربة و بعيدة عن الهدف

⚠ plan Quality Managment — Planning

⊛ identify Quality requirments and standars For Project deliverables, and doCument How?

→ Provide guidance, Direction on how Project Quality will Managed.

INput	tools	out
1- PM Plan	1- Cost Benefit Analysis	1- Quality Managment Plan
2- Stakeholder register	2- Cost of Quality	2- Process improvment Plan
3- Risk Register	3- 7 basic Quality tools	3- Quality metrics
4- Requirment Documentation	4- Benchmarking	4- Quality Checklist
5- EEF	5- Decision of Experiments	5- Project doCument updates
6- OPA	6- StatiCal Sampling	
	7- Additional Quality plan tool	
	8- Meeting	

⊛ Cost benefit Analysis: فوائد الالتزام بالجودة
less rework, higher Product, low Cost

⊛ Cost of Quality: عقد تقارير بين تكلفة الالتزام بالجودة و تكلفة عدم الالتزام

⊛ Cost of Conformance [Avoid failure]

Prevention: Training, doCument, Equipment, time to do

Appraisal Cost: testing, testlos, Inspection

⊛ Cost of Non Conformance [because of failure]:
Internal: Rework, Scrap , External: Libalities, waranty, lost business

⊛ Seven basic tools:

① Cause-effect (fishbone): Problem in ahead, Creativity way to look Causes of problem, Simulate think, explore factors will result future out

② FlowChart (process map): input, outputs → alternative path the process

③ Checklist (tally Cheet): used when gathering data, keep track of data

④ Pareto Diagram: type of barChart results from frequent to less frequent identify root Cause 80-20
Focus most Critical issues, Prioritize Potential Causes, Separate Critical few

⑤ Histogram: Display data on Columns, describe Central tendency and Shape of statiCal distribution

⑥ Control Charts: Determine is Process Stable or Not or has predictable Performance
- Mean: line in middle of range accepted variation.
- Specification limits: Represent Customer's expectations or Constrt requirment
- upper, lower Control limit: Represt Performing organization Standards of Quality

• Project manager, related Stakeholder need analyze, evalute upper, lower → +/- 3 Sigma, or ± 6 Sigma

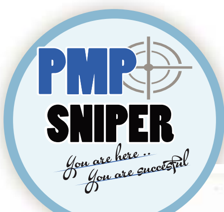
• Data point rang through in control exclude rule of ⑦
قاعدة السبع نقاط المتتالية: لو سبع نقط متتالية فوق أو تحت المتوسط دون out of Control

⑦ Scatter Diagram: Track 2 variable to determine Relationship.

⊛ Benchmarking: Compare Project with others

⊛ StatiCal Sampling: Choosing apart of Population. too much, take long

⊛ Design of Experts: to determine statiCally variable, Number, type of tests, fast, accurate





⊛ Process improvment plan: Mane details steps for analyze project and product improve save money, time, increase efficiently - prevent problems

⊛ Quality metrics: Describe product attribute, measurement Actual value.

⊛ Tolerance: Allowable variation.

⊛ Quality Checklist: structure tool, verify set of required steps.

(2) Perform Quality Assurance — Executing

⊛ Process of auditing Quality requirments and result from Quality Control to appropiate Quality Standard are used

→ facilate improvment Quality Process

Input	tools	output
1- QM plan 2- Process improvment Plan 3- Quality metrics 4- Quality Control measurment 5- Project Documents	1- Quality managment and Control tools 2- Quality Audits 3- Process Analysis	1- Change Request 2- PM Plan updates 3- Project document updates 4- OPA updates

⊛ Quality managment and Control tools +

⊛ Affinity diagram: large Number of idea Classify into group

⊛ Process decision Program Chart: (PDPC) Decompose goal into steps

⊛ Interrelationship Digraph: يسهل تحرير العلاقات وتقليل عدد العلاقات بين الاسباب والتأثيرات

⊛ Tree diagram (symantic): Decomposing hirachies as WBS, Parent-Child relationship usfel Decision analysis

⊛ Prioratize Matrix: identify key issue and suitable alternative, Criteria are Prioratized and weighted

⊛ Activity Network diagram: (Arrow diagram): (AON) + (AOA)

⊛ Matrix Diagram: the Strength of relationships between Factors and Causes and objectives.

⊛ Quality Audit: identify best Practice implemented, Share good Practice, Confirm implement Approved Changes, Reduce Cost

⊛ Process Analysis: Follow Steps outlined in Process improvement plan to identify Needed improvment

⊛ Provention: keep errors out of Process.

⊛ Inspection: keep errors out of hand the Customer.

⊙ Mutually Exclusivity: Can't both Ocur single trial.

⊙ Attribute Sampling: result Conform or not Conform

⊙ variable Sampling: result degree of Conformity

⊛ Tolerance: Specified range of accepted Result

⊛ Control Limits: identify boundaries of Common variation

Quality Assurance	Control Quality
Deal with Process Mesure Practice, Procedures	Deals with Product
Make sure right things right way	Measure requirment Make sure result what expected
Prevent defects Focus in building Proactive Prevention	detect defects Focus in test Reactive Corrective

(3) Control Quality — Monitor & Control

⊛ Monitor and recording results of executing Quality to assess Performance

→ 1- identify Cause of Poor Quality and recomend to take action

2- validating Project deliverables.

INput	tools	output
1- PM Plan 2- Quality metrics. 3- Quality Checklist. 4- work Performance Data 5- Approved Change request 6- Deliverables 7- Project documents 8- OPA	1- Seven basic Quality tools 2- Statical Sampling 3- Inspection 4- Approved change Request Review	1- Quality Control measurment 2- validated Changes 3- verified deliverables 4- work Performance information 5- Change Request 6- PM Plan updates 7- Project document updates 8- OPA updates

⊛ Inspection: Review, Perreview Audits, walkthrough Examination of work to ensure it is meet standard.

⊛ Approved Change Request Review: All approved Change Requests should be reviewed

⊛ Quality Control Measurment: Document Control Quality activities

⊛ validated Changes: نتوقع الـ Changes accepted ولا rejected

⊛ verified Deliverables: goal Control Quality Process to determine Correctness of deliverable.

Quality Management

Yasser Elzanouny

Planning

1. Plan Quality Management

IN
1. Project management plan
2. Stakeholder Register
3. Risk Register
4. Requirements Documentation
5. EEF
6. OPA

TT
1. Cost benefit Analysis
2. Cost of Quality
   - Conformance: Prevention, Appraissal
   - Non Conformance: internal, External
3. Seven basic tools
   1. Cause-effect Diagram, Fishbone-Ishikawa
   2. Flow Chart
   3. Check list, tally sheet (Category, Strain, Freq; 1, 2, 3)
   4. Pareto
   5. Histogram
   6. Control Chart (Role of 7)
   7. Scatter Diagram
4. BenchMarking
5. Decision of Expert
6. Statical Sampling
7. Additional Quality planning tools: Brainstorming, Nominal group technique, Force field Analysis, Quality Management and Control tools
8. Meeting

Out
1. Quality management plan
2. Process improvement plan
3. Quality metrics
4. Quality checklist
5. Project document update

Executing

2. Perform Quality Assurance

IN
1. Quality management plan
2. Process improvement plan
3. Quality Metrics
4. Quality Control Measurements
5. Project Documents

TT
1. Quality Management & Control tools
   1. Affinity Diagram
   2. PDPC
   3. Interrelationship Digraph
   4. Tree Diagram
   5. Prioritization Matrices
   6. Network Diagram
   7. Matrix Diagram
2. Quality Audits
3. Process Analysis

Out
1. Change Request
2. PMPlan update
3. Project Document updates
4. OPA updates

Monitor & Control

3. Control Quality

IN
1. PMplan
2. Quality metrics
3. Quality Checklists
4. Work Performance Data
5. Approved Change Requests
6. Deliverables
7. Project Documents
8. OPA

TT
1. Seven basic Quality tools
2. Statical Sampling
3. Inspection
4. Approved Change Request Review

Out
1. Quality Control Measurements
2. validated Changes
3. verified deliverables
4. work Performance Information
5. Change Request
6. PMPlan updates
7. Project document updates
8. OPA updates





7

Project Human Resource Management

#Projec_Human_Resouce_Managment



Project HR Managment

⊛ Involvment of all team members in project planning and Decision Making.

⊛ Project team (staff): Set who Support PM in Performing work in Project to achieve objectives.

⊛ project managment team: Substet of project team responsible for managment and leadership [Core, executive, leadership team]

① Plan HR Managment — Planning

⊛ Identify, doCument Project roles and responsability, required Skills, reporting relations.

→ Establish Project roles, responsabilities, Charts, staffing managment plan.

INput	tools	output
1- Project managment Plan 2- Activity resource Requirments 3- EEF 4- OPA	1- Organization Charts and position description 2- Networking 3- Organizational theory 4- Expert judgment 5- Meeting	1- HR Managment Plan

⊛ Networking: interaction with others in organization

⊛ Organizational theory: individual Response ← way بيحدد الـ لتوضيح طرق التفاعل مع الاشخاص.

⊛ Organizational Charts and Position description: various formate to doCument team member roles and respo…

⊙ Hirarchial: Show Positions and relationships in graphical top-down

⊙ OBS: accord to existing depatment.

⊙ RBS: Hierachial list resource related Category and type

⊙ Matrix based Charts:

⊙ Responsible assignment Matrix [RAM]: Secondary ↑↑ Primary تحديد المسؤول

⊙ RACI: Responsible, ACcountable, Consult, inform.

⊙ Text Orianted: detailed description Position description (Role, Responsibility, Authority)

⊛ HR Managment Plan: ① Roles, Responsability ② Project organization Charts ③ Staffing managment plan

① Roles: Function Such Civil engineer, aCCount ② Responsability: assigned duties and work.

③ Authority: Right to apply Project resources (make decision, Sign approval, accept deliverable, influence)

④ Competency: Skills and Capacity

⊛ Staff managment Plan: ⊛ ACquiring: when, How team will be acquired.

① Staff acquistion: تحديد طريقه الحصول على الموظفين وهل داخلياً او خارجياً

② Resource Calender: Resource Histogram تحديد ايام العمل وعدد الساعات مثال

③ Staff release plan: خطه تسريح الموظفين لابد تكون Smoth

④ training need: التدريب لرفع الكفاءة

⑤ Recognization, rewards: Clear Criteria المكافآت

⑥ Compliance: وضع كيفيه الامتثال للقانون والسياسات

⑦ Safety: التخطيط لسياسات تحمى سلامه الافراد

② Acquire Project team — Executing

⊛ Confirming HR availability and obtain team necessary to Complet Project.

→ Consist of outline and guide team Selection and responsibility

INput	tools	output
1- HR managment Plan 2- EEF 3- OPA	1- Pre assignment 2- Negotiation 3- Acquisition 4- Virtual team 5- Multi Criteria decision Analysis	1- Project Staff Assignments 2- Resource Calender 3- pmp updates

⊛ Multi Criteria Decision Analysis: available, Cost, experience, Ability

⊛ Project Staff Assignments: تحرير العاملين بالمشروع

⊛ Resource Calender: when – How long



③ Develop Project team — Executing

⊛ Improving Competencies, team member interaction overall team enviroment
→ improved teamwork, enhance skills, motivated employees, reduce staff turnover

Input	tools	output
1- HR Plan 2- Project Staff assignments 3- Resource Calender	1- interpersonal skills 2- Training 3- Team build Activity 4- Ground Rules 5- Colocation 6- Recognition, Rewards 7- Personal assessment tools	1- team Performance Assessment 2- EEF

⊛ Interpersonal Skills (Softskills): Communication skills, emotional intelligence, Conflict resolution, influence

⊛ Team building Activity: wBS is team building tool
- improve interaction
- improve trust

⊛ Tuckman ladder Model:
1- Forming: independent - Not open, team informed thier roles.
2- Storming: Disagreement as apeople to work together.
3- Norming: Team begin work together and trust
4- Performing: Team become efficient and work effectively together
5- Adjourning: Team Complete work and leave.

⊛ Colocation: (Tight matrix): Put the team Same physical location to enhance thier ability [warroom]

⊛ Personal assessment tools: Strength and weakness دراسه سلوك الفرد وتصرفاته واتخاذ القرار ونقاط القوه والضعف

⊛ Team Performance Assessments: evaluate and enhance team efficienveness include
بعد القيام بكل مجهود ومصاريف التدريب نشوف العائد ومدى الاستفادة

④ Manage Project team — Executing

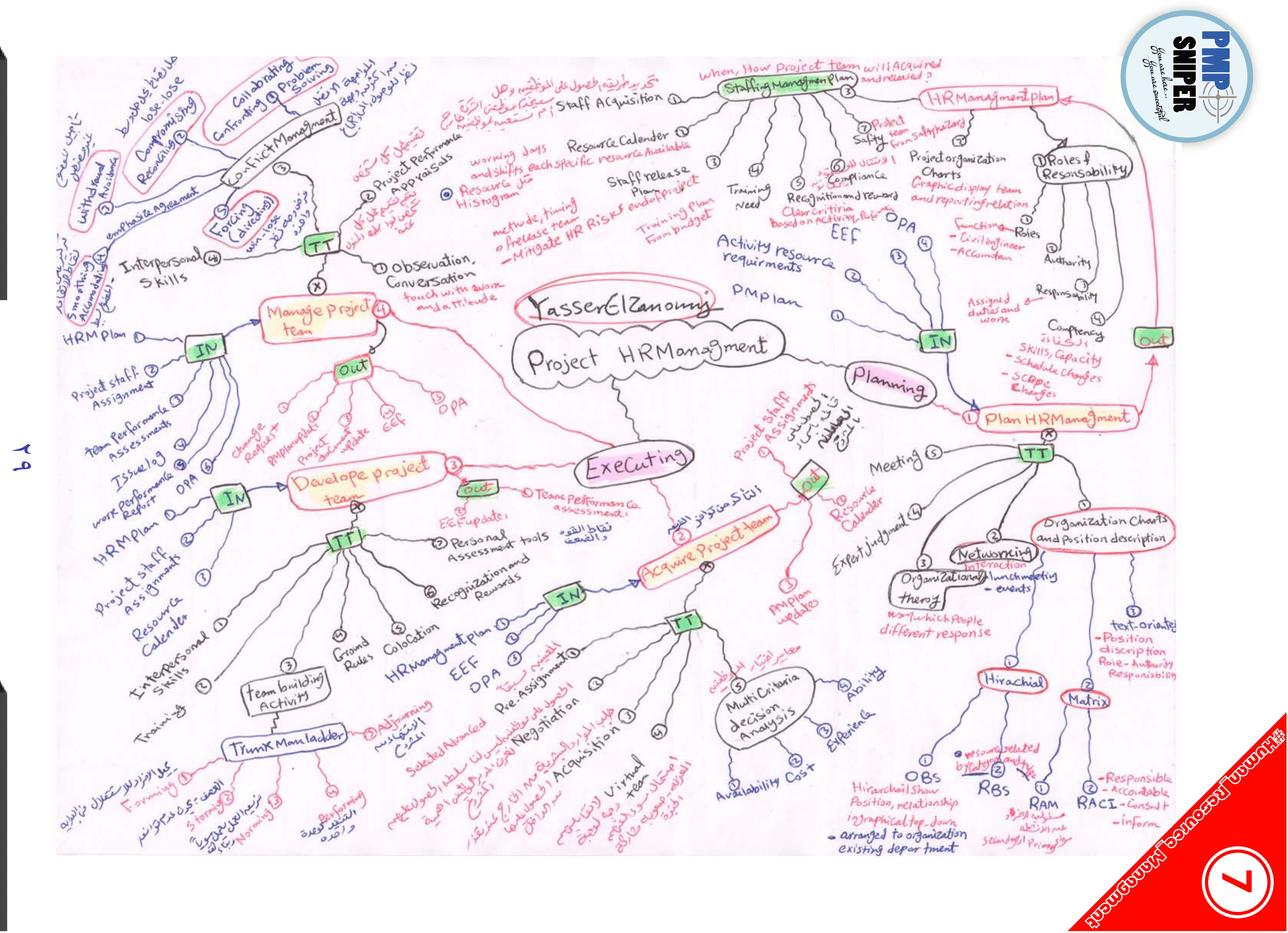
⊛ Tracking team member Performance, Provide feedback, resolving issue
→ influence team behavior, manage Conflicts

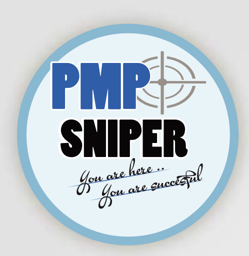
Input	tools	output
1- HR management Plan 2- Project staff assignments 3- Team Performance Assessments 4- Issue log 5- work Performance report 6- OPA	1- Observation and Conversation 2- Project Performance Appraisals 3- Conflict Management 4- Interpersonal Skills	1- Change Request 2- PM Plan updates 3- Project document updates 4- EEF 5- OPA

⊛ Observation and Conversation. touch with work

⊛ Project Performance Appraisals - عمل تقييم لكل شخص من المشروع بواسطة المسئول عنه

⊛ Conflict managment: Techniques ① Collaboration [Confronting, Problem Solving]: Consuses (win win)
② Compromissing (Reconciling): degree of satisfication (lose-lose)
③ withdrawl (Avoidance): Postpone Not the best
④ Smoothing (Accomodating): emphasize Agreement rather difference
⑤ Forcing (Directing): Pushing One overview (win-lose)


YasserElzanouny
Project HRManagment
Planning
Executing
Plan HRManagment
HRManagment plan
Staffing Managment plan
When, How Project team will Acquired and released ?
Staff Acquisition
Resource Calender
Staff release Plan
Training Need
Recognition and reward
Compliance
Safty
Project organization Charts
Roles & Responsability
Roles
Authority
Responsability
Competency
Activity resource requirments
PMPlan
EEF
OPA
Meeting
Expert Judgment
Organization Charts and Position description
Networking
Organizational theory
Hirachial
Matrix
text-oriented
OBS
RBS
RAM
RACI
- Responsible
- Accountable
- Consult
- inform
Acquire Project team
Pre-Assignment
Negotiation
Acquisition
Virtual team
Multi Criteria decision Analysis
Availability
Cost
Experience
Ability
Project staff Assignments
Resource Calender
PMPlan updates
Develope project team
Interpersonal Skills
Training
Team building Activity
Ground Rules
CoLoCation
Recognization and Rewards
Personal Assessment tools
Team Performance assessment
EEF update
Trunk Man ladder
Forming
Storming
Norming
Performing
Adjourning
Manage Project team
HRM Plan
Project staff Assignment
Team Performance assessments
Issue log
work Performance Report
OPA
Observation, Conversation
Project Performance Appraisals
Conflict Managment
Interpersonal Skills
Collaborating
Confronting
Problem Solving
Compromising
Reconciling
lose-lose
Forcing (directing)
win-lose
Withdrawal
Avoidance
Smoothing
Accommodating
emphasize agreement
change request
PMPlan update
Project documents update

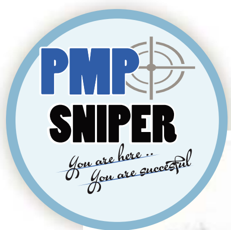




8

Project Communications Management

#Project_Communications_Managment



Project CommuniCations Managment

⊛ ProCess required to ensure timely and appropriate planning, Collection, Creation, distribution, Storage managment, Control disposition of Project

1) Plan CommuniCation Managment

⊛ ProCess of developing an appropiate approach and Plan For Project CommuniCations based on Stakeholder information needs and requirments.
→ Identify and doCument the approach CommuniCate most effectivey and efficienty with stakeholder

INput	tools	output
1- Project managment plan 2- Stakeholder Register 3- EEF 4- OPA	1- CommuniCation Requirment Analysis 2- CommuniCation Technology 3- CommuniCation Model 4- CommuniCation methods 5- Meeting	1- CommuniCations managment Plan 2- Project doCument updates

⊛ CommuniCation Requirment Analysis:
Requirment defined by Combine type and format of information needed with analysis.

$$Channels = \frac{N(N-1)}{2}$$

كلما زادت قنوات الاتصال زاد ال Complexity

⊛ CommuniCation Technology: تتنوع طرق الاتصال في المشروع فقد يكون شفهياً او هاتف او بريد

Factors affect ChoiCe:
- Urgency
- Availability
- Ease
- Environment
- Sensitivity & Confidentiality

⊛ CommuniCation Models:
- Sender
- EnCode ⊛Transmitted message
- DeCode ⊛Medium
- Aknowledge
- Feedback

⊛ CommuniCation Methodes

① Interactive: - يكون بين طرفين او اكثر لتبادل المعلومات وهو افضل الانواع لضمان الفهم المشترك
Ex: Conversation, meeting, instant message, Conference Call

② Push: - ارسال المعلومات لاشخاص محددين تضمن نشر المعلومة بطريقة سريعة لكن لا تضمن ان المعلومة وصلت فعلا ، لا تضمن انه تم فهمها بشكل صحيح
Ex: letters, memos, reports, email, fax, voiCemail, blogs, Press release

③ Pull: very large voum of info for large audienCe
Ex: internat site, e-learning, lessons learned database, knowledge repositories.

⊛ CommuniCation Managment plan:
Provide how CommuniCation will be managed?
- Stakholder CommuniCation Requirment
- language, Formate, Content
- Reason distribution
- Time Frame, frequenty
- Person Responsible, Methods, Technology
- ResourCe AlloCated



② Manage CommuniCations — Executing

⊛ Creating, Collecting, distributing, Sorting and the ultimate disposition of project information in accordance to CommuniCation managment plan.
→ enables efficient and effective CommuniCation Follow between project stakeholder.

INput	tools	output
1- CommuniCation managment plan 2- work performanCe Report 3- EEF - OPA	1- CommuniCation Technology 2- CommuniCation Model 3- CommuniCation Methods 4- Information managment system 5- PerformanCe Reporting	1- Project CommuniCations 2- Project managment Plan updates 3- Project doCument updates 4- OPA updates

⊛ PerformanCe Reporting: Collecting and distributing PerformanCe information, include Status report, ProCess report, forecasts, involves Periodic Collection and analysis

⊛ Project CommuniCations:
Ex: PerformanCe Report, Deliverable status, Schedule progress.

③ Control CommuniCations

⊛ ProCess of monitoring and Controlling CommuniCation to ensure information needs by stakeholder are met.
→ ensure optimal information Follow among all CommuniCation participants at any moment in time

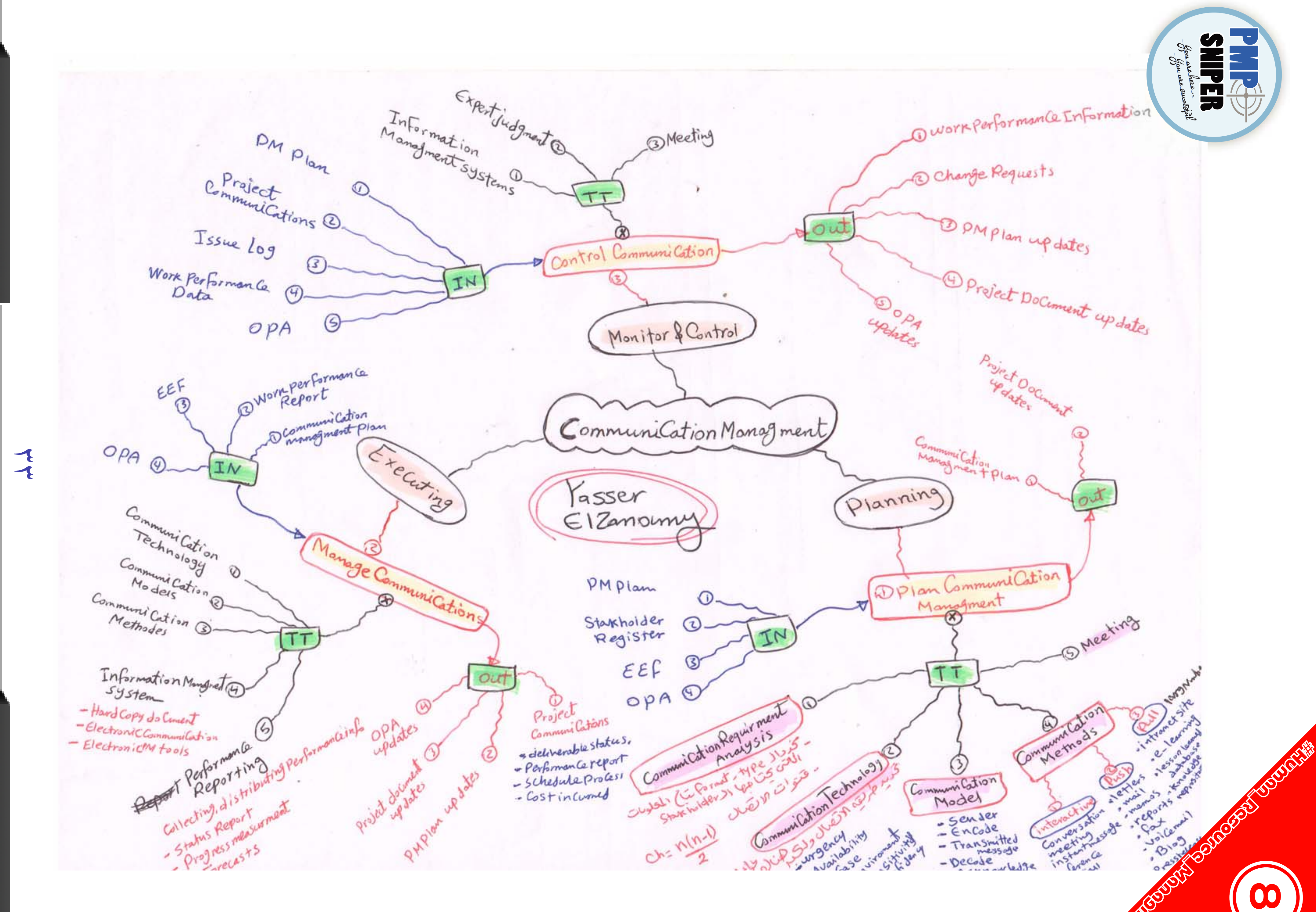
INput	tools	output
1- PM Plan 2- Project CommuniCations 3- work performanCe Data 4- OPA 5- ISSue log	1- Information managment system 2- Expert judgment 3- Meeting	1- work performanCe information 2- Change request 3- PM plan updates 4- Project doCument updates 5- OPA updates

⊛ ISSue log: كل يحتوى كل المشاكل وهل تم حلها والأدوار المسئولين عن الحل والتاريخ الذي سيتم الحل فيه

⊛ CommuniCation Blockers (Barries - NoiSe)

- Noisy surrounding.
- Distance between try to CommuniCate.
- Improper enCoding of message.
- Making negative Statment
- Language
- Hostility
- Culture

تسبب Conflict وبيدل على ضعف تحكم مديرا لمشروع


PMP SNIPER
You are here... You are successful
Communication Management
Yasser Elzanouny
Planning
Executing
Monitor & Control
① Plan Communication Management
IN
① PM Plan
② Stakeholder Register
③ EEF
④ OPA
TT
① Communication Requirement Analysis
② Communication Technology
③ Communication Model
- Sender
- Encode
- Transmitted message
- Decode
④ Communication Methods
Interactive
Push
Pull
⑤ Meeting
Out
① Communication Management Plan
② Project Document updates
② Manage Communications
IN
① Communication management plan
② Work performance Report
③ EEF
④ OPA
TT
① Communication Technology
② Communication Models
③ Communication Methodes
④ Information Mangment System
- Hard Copy document
- Electronic Communication
- Electronic PM tools
⑤ Performance Reporting
Collecting, distributing Performance info
- Status Report
- Progress measurement
Out
① Project Communications
- deliverable status,
- Performance report
- Schedule Progress
- Cost incurred
② PM Plan updates
③ Project document updates
④ OPA updates
③ Control Communication
IN
① PM Plan
② Project Communications
③ Issue log
④ Work Performance Data
⑤ OPA
TT
① Information Management systems
② Expert judgment
③ Meeting
Out
① Work Performance Information
② Change Requests
③ PM Plan updates
④ Project Document updates
⑤ OPA updates
$Ch = \frac{n(n-1)}{2}$



9

Project Risk Management

#Project_Risk_Managment



Risk Managment — 6 process x 2 phases

⊛ Project risk Managment: Conduct risk managment planning, identification, analyize and control risk.

⊛ Risk: unCertain event if occurs have positive or negative effect

Risk managment: Objective to increase probability, impact positive event, decrease probability, impact negative events

Risk factors: 1- Probability 2- Expect time 3- Frequenty 4- range of outcome Impact

Risk Seeker [appetite]: Degree of unCertainty an entity willing to take

Risk tolerance: Degree, volume, amount organization accept

Risk threshold: measures along the level of level unCertaint which have impact stakholder accept

Risk Averse: Someone dosn't want take risk

1 Plan Risk Managment — Planning

⊛ Define how Conduct managment Activities

→ ensure degree, type and visibility of risk Commensurate with risk and importance

INput	tools	output
1- PM plan 2- Project Charter 3- Stakeholder register 4- EEF 5- OPA	1- Analytical techniques 2- Expert judgment 3- Meeting	1- Risk managment Plan

⊛ AnalytiCal techniques: Performed to grade Project Stakholder risk appetite, tolerance

⊛ Risk Managment Plan:
Methodology, Roles, Responsability, budget, time, Probability & impact Matrix, Reporting Formates, tracking, Risk Categories.

⊛ Risk Categories
- External
- Internal
- Technical
- unforess eable only Small portion of risk

Risk breakdown Structure [RBS]

Organization Chart help you identify risk Categories

2 Identify Risk — Planning

⊛ determining which risk may effect the pr... and doCumenting their Characteristics

INput	tools	output
1- RMPlan 2- CMPlan 3- SMPlan 4- QMPlan 5- HRMPlan 6- Scope baseline 7- Activity Cost estimate 8- Activity duration estimate 9- Stakholder register 10- Project doCuments 11- ProCurment doCuments 12- EEF 13- OPA	1- DoCumentation reviews 2- information gather technique 3- Checklist analysis 4- Assumptions analysis 5- Diagramming technique 6- Swot analysis 7- Expert judgment	Risk Regist...

⊛ DoCumentation Review: Quality of plans
مراجعة جودة الخطط والتناسق بينها

⊛ Information gathering techniques:
BrainStorm, Delphi, Interview, Root Cause Analysis

⊛ Checklist Analysis:
Based on historiCal information from Previous Similar project → Quick and Simple
Note: Not used avoid Effort Proper risk identificat...

⊛ Assumption Analysis:
Analyze Assumptions have made on project the are valid may my be identification of risk

⊛ Diagramming techniques: root Causes, Simulate thinking
- ⊙ Cause, effect diagram
- ⊙ Process or system FlowChart
- ⊙ InFlunce Diagram: Graphical representation Showing Causal influence, time ordering of event, other relationships among variable

⊛ Swot Anaysis:
Strength, weakness, Opportunities, threats Perspectives to increase breadth of identified risk

3 Perform Qualitative Risk Analysis — Planning

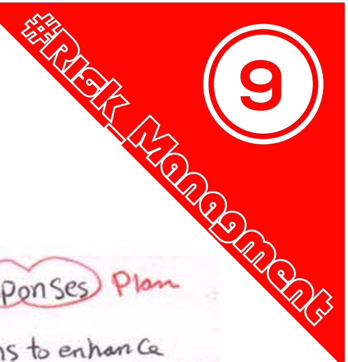
⊛ Priortizing risk for further analysis, and assessing their probability, impact.

→ Enable PM reduce level of unCertainty and focus high level risk

INput	tools	output
1- RMPlan 2- Scope baseline 3- Risk Register 4- EEF 5- OPA	1- Risk Probability, impact assesment 2- Probability, impact Matrix 3- Risk data Quality assessment 4- Risk CategoriZation 5- Risk urgency assessment 6- Expert judgment	Project doCument updates







⊛ Risk Probability, impact assessment:

investigate probability each specific risk occur, impact effect on project objectives such scudle, cost, quality including negative and positive effect.

⊛ Probability and impact Matrix:

Sort, rate, rank to determine which warrant immediat response and which put in watch list

⊛ Risk data quality assesment:

- Extent of understanding risk, Data available, Reliability and integrity

⊛ Risk Categorization:

Risk Categorized by source using RBS, Allow eliminate many risks at once by eliminate one cause

⊛ Risk urgency assessment:

Risk Requir near response may be considerd more urgent

⊛ Risk Register updates: Shortlist, subjective, Priority

4 Perform Quantitative Risk Analysis — Planning

INput	tools	output
1-RM Plan 2-Cost M Plan 3-Scudule M Plan 4-Risk Register 5-EEF 6-OPA	1-Data gathering representation techniques 2-Quantative risk analysis an modeling techniques 3-Expert judgment	1-Project document updates

⊛ Data gathering, representation techniques:

1-Interview 2-Delphi 3-Probability distribution [Beta, triangle]

⊛ Quantitative Risk analysis, modeling techniques:

1-Sensitivity Analysis [tornado]:
- Analyze and compare potential impact of identified risk
- determin which risk most potential impact

2-Expected Monetary value analysis [EMV]:
$EMV = P \times I$ implemented this phase
Revised at risk response plan

⊛ Decision tree:
$EMV = P \times I$
فى الحل تؤ

4-Modeling and Simulation (Monte Carlo)

Project simulation use model translate specific detailed unCertaines into their potential impact on project objectives
- Evaluate overall risk of project.
- Probability completing project any specific day, specific cost
- Probability activity to critical path → Result probability distribution

Qualitative	Quantitive
subjective	objective
Result = high	Result = 200$
all risk	No All risk

5 Plan Risk Responses — Plan

⊛ Developing options, actions to enhance opportunities and reduce threats to projet object
→ address risk by priority, inserting resources and activities into budget, schedule.

INput	tools	output
1-RM Plan 2-Risk Register	1-Strategies for Neg risk or threat 2-Strategies for Pos risk or opportunities 3-Contengen response strategy 4-Expert judgment	1-PM plan updates 2-Project document updates

⊛ Strategies for Negative risk:

Critical risk:
1→ Avoid: Eliminate the cause Ex: change PP lan, remove workpackage, extend schedule, reduce scope
2-Mitigate: Reduce probability, impact
Ex: more tests, more than supplier

Non Critical:
3-Transfer [Deflect, Allocate]:
Shift impact to 3rd party, give another the party responsibl
Ex: Assurance, warranty, guarantee, contract
4-Accept: Aknowledge risk Not take any action unless occurs
Active: Contengency plan + reserve
passive: work arounds

⊛ Strategies For Positive risk:

1-Exploit: Make sure opportunity occurs
Ex: talent resource, new technology
2-Enhance: Increas probability and impact positive
Ex: Adding more resource to finish early.
3-Share: Allocate ownership to 3rd party
Ex: Sharing ownership, Join ventures
4-Accept: willing to take advantages of opportunity but not actively purchase it.

⊛ Contingent Response strategies:

→ Contingency plan: plan descripe action will taken if risk oc
→ Fallback plan (B): plan descrip action taken if contingent plan no effectiv
Risk trigger: events that trigger contingency response
Secondary risk: responce to risk may create new risk
Residual risk: remain after planned response, Accepted

⊛ Contingency reserves (knowns): Identified in risk management in contingency plan, fallback plan, PM control, using Decision tree

⊛ Managment reserve (unknowns) Not in RM. Not in cost baseline but in budget

6 Control Risk — Control

INput	tools	output
1-PM Plan 2-Risk Register 3-wp dat 4-wp Report	1-Risk Reassessment 2-Risk Audit 3-Variance, Trend Analysis 4-Technical performance measurment 5-Reserve Analysis 6-Meeting	1-wp info 2-Change Request 3-PM Plan update 4-Pr document updates 5-OPA update

Risk Audits: Assess overall process of R Manag, Put in RM plan

Variance, Trend analysis:
Variance = Planned - Actual
Trend: p execution review

Reserve Analysis:
Compare contengcy reserve b

Work arounds:
unplanned response with accepted risk

PMP SNIPER
You are here.. You are successful

Project Risk Management

Yasser Elzanouny

Planning (5)

(1) Plan Risk Management
IN: PMPlan, Project Charter, Stakeholder register, EEF, OPA
TT: Analytical technique (to know stakeholder appetite, tolerance), Expert Judgment, Meeting
OUT: Risk management Plan — methodology, budget, time, Report format, Probability matrix, RBS, risk factors (range, impact, probability, time, Frequency), Category (Technical, internal, external)

(2) Identify Risk
IN: RM Plan, CMPlan, SMPlan, QMPlan, HRM Plan, Scope baseline, Activity Cost Estimate, Activity Duration Estimate, Stakeholder Register, Project Document, ProCurement document, EEF, OPA
TT: Documentation Review, Information Gathering techniques (Brain storm, Delphi, interview, Root Cause), Checklist (historic info — Quick and simple), Assumption Analysis, Diagram techniques (Cause effect, Flow chart, influencing), SWOT, Expert Judgment
OUT: Risk Register

(3) Perform Qualitative Risk Analysis
IN: Risk management Plan, Scope baseline, Risk Register, EEF, OPA
TT: Risk Probability and impact assessment, Probability and impact Matrix, Risk Data Quality Assessment, Risk categorized, Risk urgency Assessment, Expert Judgment
OUT: Project document updates — Risk register, Assumption log

(4) Perform Quantitative Risk Analysis
IN: Risk managment plan, Cost managment Plan, Schedule managment Plan, Risk Register, EEF, OPA
TT: Data gathering, representation technique; Quantitative risk Analysis, modeling techniques — Sensitive Analysis (tornado), Expect monetary value (EVM), EVM = P × I, Decision tree Diagram, Monitoring & Simulation (Monto Carlo, translate uncertain → impact); Expert judgment
OUT: Project Document updates — Risk register update, Contingency reserve

Note: Cost baseline = project cost + Contingency reserve
budget = Cost baseline + Management reserve

(5) Plan Risk Response
IN: Risk management Plan, Risk Register
TT: Strategic for Positive Risk (Exploit, Share, Enhance, Accept); Strategic for Negative Risk (Avoid, Mitigate, Transfer, Accept — Active, Passive); Contingent response strategy (Contingency response, Fallback plans); Expert judgment
OUT: PMPlan update, Project document update
- Contingency Plan
- Reserve
work Around

(6) Control Risk — Monitor & Control
IN: PM Plan, Risk Register, work Performance data, work Performance Report
TT: Risk Reassessment, Risk Audits, Variance, trend analysis (Variance = Plan − Actual; trend: execution Reviews), Technical Performance measurement, Reserve Analysis, Meeting
OUT: work Performance information, Change Request, PMPlan update, Project document update, OPA







10

Project Procurement Management

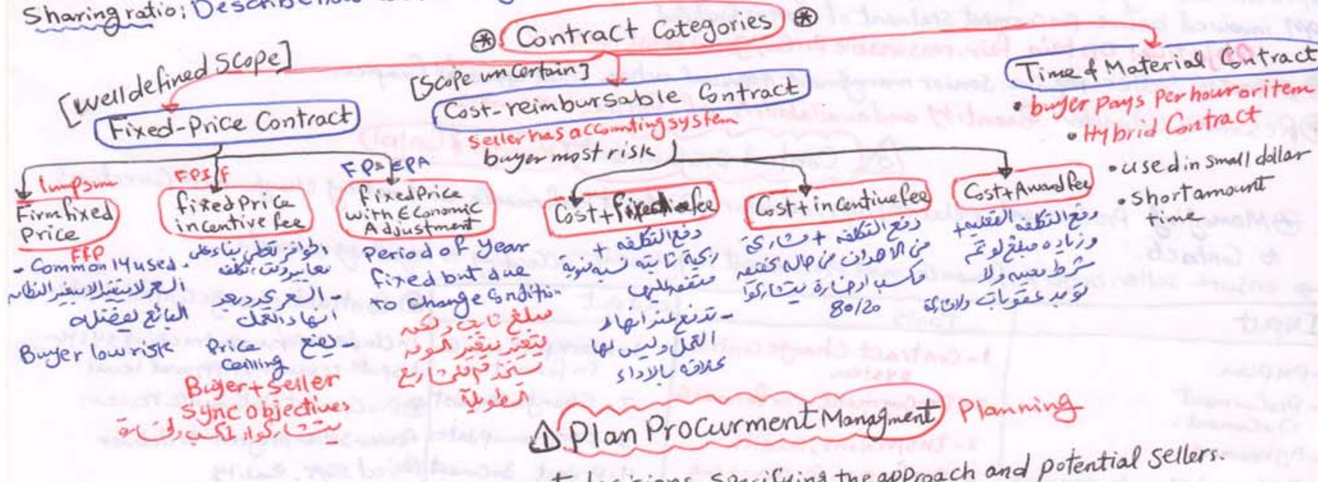
#Project_Procurement_Managment



ProCurement Managment

- Include ProCess to Purchase or acquire products, Services from out Side the project team.
- Include Contract managment and Change Control required.

- **Buyer**: Acquire Product or Service maybe Client, Customer, Contractor, Acquirorganization, Purshaser.
- **Seller**: Provider or supplier of product, service or result, may be Contractor, supplier, vendor, Service provider
- **Contract**: Agreement, legal doCument between buyer, seller, Mutually binding, formal official, Reduce Risk
- **Centeralized**: one proCurement department, ProCurment manager may handle ProCurment on many Projects
- **Decentralized**: ProCurment manager assigned to one Project Fulltime, reports directly to Project manager.
- **Cost**: Buyer Cost = Seller Cost + Profit.
- **Profit (fee)**: Planned into Price the seller Provides buyer.
- **Price**: Amount Seller Charges the buyer.
- **target price**: Compare final Price what was expected target price (measure success)
- **Ceiling Price**: Highest price the buyer will Pay
- **Sharing ratio**: Describe how Cost saving or overrun will Shared 80/20 buyer/Seller.



Plan ProCurment Managment — Planning

- DoCument project proCurment decisions, Specifying the approach and potential Sellers.
- DoCument whether to acquire outside Support and what to acquire, How?

INput	tools	output
1- PMPlan 2- Requirments doCumentation 3- Risk Register 4- Activity resource Requirments 5- Project Schedule 6- Activity Cost estimates 7- Stakeholder Register 8- EEF 9- OPA	1- Make or buy analysis 2- Market Research 3- Expert Judgment 4- Meeting	1- ProCurment managment Plan 2- ProCurment Statment of work 3- ProCurment doCuments 4- SourCe Selection Criteria 5- Make or buy Decision 6- Change Request 7- Project doCument update

- **Activity Cost Estimation**: for Compare seller's price
- **Make-or-buy Decision**:

  Days = عمر الشراء / (تكلفة يار – تكلفة الصيانة)

- **Market Research**: Examin industry Specific vendor Capability
- **ProCurment managment plan**: types of Contract, Risk issue, Any Constrain, Standarize ProCurment.
- **ProCurment Statment of work**: work to be done on each ProCurment must Clear, Complet, describe All work Activity
- **letter of intent**: Not Contract
- **Privity**: Contractual relationship
- **Non disclosure Agreement**
- **Default, Breach**:

- **ProCurment doCuments**:
  - **Request For ProPosal (RFP)**: Detailed how work will accomplished.
  - **Invitation For bid (Request) (RFB)**: Request total price to do all work
  - **Request For Quotation (RFQ)**: Price Quota Per item, hour, meter
  - **Request For information (RFI)**: DoCuments to facilate a ccurate, Complete response From each prospective seller, easy evaluation of response
- **SourCe Selection Criteria**: use rate or Score Seller Cost, Capability
- **force majeure**: قوة قهرية
- **waiver**:
- **Make or buy DeCision**: Result in decision
- **Material breach**:



2 Conduct Procurement — Executing

⊛ obtaining seller response, selecting seller, awarding Contract.
→ provides alignment of internal, External stakeholder expectation through establish agreement

Input	tools	output
1- Procurement management plan 2- Procurement documents 3- Source selection Criteria 4- Seller Proposals 5- Project documents 6- Make or buy decisions 7- Procurement statement of work 8- OPA	1- Bidder Conference 2- Proposal evaluation techniques 3- Independent estimate 4- Expert judgment 5- Advertising 6- Analytical techniques 7- Procurement negotiation	1- Selected Seller 2- agreements 3- Resource Calender 4- Change Request 5- PM plan update 6- Project document updates

⊛ Bidder Conference: to ensure all sellers have clear common understanding, Respons to Questions
⊛ Proposal evaluation technique: using Source selection to define weighted Criteria
⊛ Independent Estimates: Serve as Benchmarking
← الاختلافات الكبيرة بين العروض المقدمة تراجع
→ Procurement statement of work

⊛ Advertising: Placing advertisment in general Circulation publication
⊛ Analytical techniques: Examing past Performance information may have more risk
⊛ Procurement Negotiation: PM may Not lead negotiation but provide assistance, add Clarification
PM involved before procurement statment of work is finilized
Objective: obtain fair, reasonable Price, good relationship
⊛ Sellected Seller: require Senior managment Approval when Final approval Complex.
⊛ Resource Calender: Quantity and availability of Contract resource.

3 Control Procurement — Monitor & Control

⊛ Managing Procurement relationships, monitor Contract performance and making changes and Corrections to Contracts.
→ ensure seller, buyer Performance meet Procurement requirment according to legal agreements

Input	Tools	output
1- PM Plan 2- Procurment Documents 3- Agreements 4- Approved Change requests 5- work Performance Data	1- Contract Change control system 2- Procurment Performance reviews 3- Inspections, Audits 4- Performance reporting 5- Payment systems 6- Claims administration 7- Record Managment system	1- work Performance information 2- Change request 3- PM Plan update 4- Project document updates 5- OPA updates

⊛ Contract change Control system: include paper work, tracking system, dispute resolution, Approval level
⊛ Procurment Performance review: Review seller progress to deliver Project scope, Quality
⊛ Inspection, Audits: during execution to verify Compliance Seller work Process

⊛ Payment system: After satisfication of work an authorized person on project team. All Payment Should be made and documented.
⊛ Claim Administration: Claims, disputes, appeals: Contested Changes and Potential Constructive changes
The best way: ① Negotiation → ADR [alternative dispute resolution] Mediation → Arbitration → Courts
⊛ Record Managment system: Part of PMIS include index, archieve information, every mail, written verbal Commun[ication]

4 Close Procurment — Closing

⊛ Process of Completing each procurment.
→ documents agreements, related documents for future reference

Input	tools	output
1- PM Plan 2- Procurment Documents	1- Procurment Audits 2- Procurment Negotiations 3- Records management system	1- Closed Procurment 2- OPA updates

Close procurment
- Contract Complete
- Contract termin[ation]
  - Convenience: المشترى بيريد يكمل يدفع ما تم انجازه + العمل الجارى
  - Cause br[each]: عدم التزام البائع ندفع ما تم انجازه ولا ندفع الجارى

خطوات الاغلاق بالترتيب:
1- Product validation
2- Procurment Negotiation
3- Final Closure
4- Procurment audit
5- updates for record
6- lessons learned
7- Procurment file
8- Financial Closure

⊛ Procurment Audits: review of Procurment process from Plan Procurment
→ Identify Success, failure in administration procurment
⊛ Record managment system: Contract Documented as part of Close Procurment
⊛ Closed Procurment: buyer provide Formal written notice according to Contract



Procurement Management (Prokyrment Managment)

YasserElzanouny

Planning

Plan Procurement Management
- IN: Stakeholder Register; EEF; OPA; Activity Cost Estimates; Project Schedule; Activity resource requirement; Risk Register; PMPlan; Procurement Documents
- TT: Market Research; Expert judgment; Make-buy Analysis; Meeting
- Out: Project document updates; Change Request; Make-buy Decision; Source selection Criteria; Procurement statement of work; Procurement management Plan; Procurment Document (RFP, RFB, RFQ, RFI)

Executing

Conduct Procurement
- IN: PMPlan; Procurment Document; OPA; Make-buy Decision; Project documents; Source selection Criteria; Seller Proposal; Procurment Statment of work
- TT: Bidder Conference; Proposal evaluation; independent estimates; Expert judgment; Advertising; Analytical techniques; Procurment Negotiation
- Out: Selected seller; Agreement; Resource Calender; Change Request; PMPlan updates; Project document updates

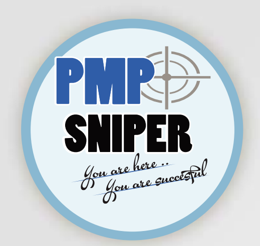
Monitor & Control

Control ProCurment
- IN: Project management Plan; ProCurment Document; Agreement; work Performance Data; Approved Change request
- TT: Contract Change Control System; Record managment System; Claims Administration; Payment system; Performance Report; Inspection & Audit
- Out: work Performance information; Change Request; PMPlan updates; Project document updates; OPA

Closing

Close ProCurment
- IN: Project Management Plan; ProCurment Documents
- TT: Procurment Audits; Procurment Negotiation; Record Managment system
- Out: Close ProCurment; OPA updates

Contracts Categories
- Fixed price (Lump Sum): Firm Fixed Price (FFP) – Buyer least Risk; Fixed Price incentive fee (FPIF) – objectives; Fixed price with economic price Adjustment (FP-EPA)
- Cost-reimbursable: Cost+fixed fee (CPFF); Cost+incentive fee (CPIF); Cost+Award fee
- Time & Material



11

Project Stakeholder Management

#Project_Stakeholder_Managment



Project Stakeholder Managment

⊛ Process required to identify stakeholders that impact or impacted by the project to analyze stakeholder expecations and thier impact, It focus continuos communication with stakeholder to understand thier needs, stakeholder satisfication should be managed as key project objective

① Identify Stakeholders — Intiation

⊛ Process identifying stakeholders, analyzing and documenting thier interests, interdependencies, influences and potential impact.

→ Allow project manager to identify appropiate focus to each stakeholder.

Input	tools	output
1- Project charter 2- Procurment documents 3- EEF 4- OPA	1- Stakeholder Analysis 2- Expert judgment 3- Meeting	1- Stakeholder Register

⊛ Stakeholder Register:
- Identification information: Name, position, location, Role
- Assessment information: requirment, expecation, influence
- Classification: internal, External, supporters, Neutral

⊛ Stakeholder analysis steps:
- ⊙ Identify potential project stakeholder: Project charter or interview
- ⊙ Analyze potential impact: import to prioratize stakeholder efficient
- ⊙ Assess how stakeholders react (respond): Classification Models:
  - ⊙ Power / Interest
  - ⊙ Power / Influence
  - ⊙ Influence / Impact

⊛ Salience Model:
Describe classes of stakeholder based on thier [power, urgency, legitimacy]

② Plan Stakeholder ~~Risk~~ Managment

⊛ ~~Process establish policies, procedures and documentation for planning, managing, expanding and controlling~~ ⊛ Process of developing appropiate managment strategies to effectively engage stakeholders through project life cycle based on analysis needs, interests and potential impact

→ Provide clear, actionable plan to intract whith project stakeholders to support project interests

Input	tools	Output
1- Project managment plan 2- Stakeholder Register 3- EEF 4- OPA	1- Expert Judgment 2- Meeting 3- Analytical Techniques	1- Stakeholder Managment Plan 2- Project Documents updates

⊛ Analytical Techniques:
- ⊙ unaware
- ⊙ Resistance
- ⊙ Supportive
- ⊙ Neutral
- ⊙ leading

Stakeholder Engagment Assessment Matrix

⊛ Stakeholder Managment plan:
- Desired and current engagment levels of key stakeholder
- Scope and impact of change to stakholder
- Identify interrelationships and overlap between stakeholder.
- Stakehold communication requirments.
- Reson for distribution of information and expected impact.



③ Manage Stakeholder Engagment — Execution

⊛ Process of Communication and work with Stakeholder to meet needs/expecation and Foster appropiate Stakeholder ~~managment~~ engagment
→ Increase Support and minimize resitence From Stakeholder.

INput	Tools	output
1- Stakeholder managment plan 2- Communications mangment Plan 3- Change Log 4- OPA	1- Communication Methods 2- Interpersonal Skills 3- Managment Skills	1- ISSue log 2- Change Request 3- PMPlan update 4- Project document update 5- OPA updates

⊛ Interpersonal Skills:
- Building trust - Resolving Conflict - Active Listining - OverComing resistance

⊛ Mangment Skills:
- Facilitate Consensus toward Project objective
- Influence People to Support Project.
- Negotiate Aggreements.

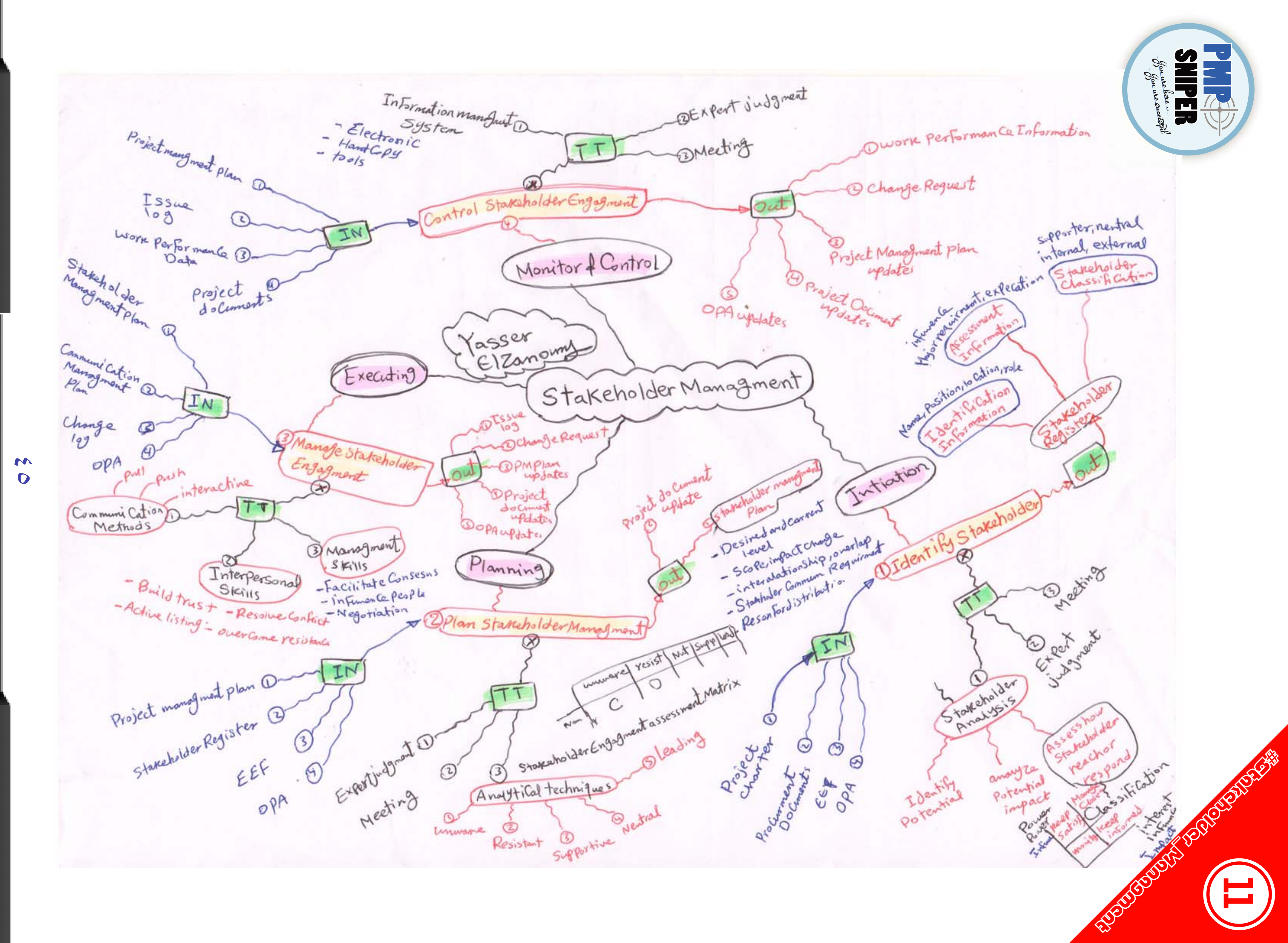
⊛ Change Requests
may be Corrective and Preventive Actions

④ Control Stakeholder Engagment — Monitor & Control

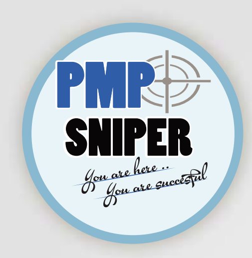
⊛ monitoring stakeholder relationships and adjusting Strategies and plan to engaging Stakeholder
→ It maintain Or increase efficiency and effectivness of Stakeholder engagment

INput	tools	Output
1- PM Plan 2- ISSuelog 3- workPerformance Data 4- Project documents	1- Information managment System 2- Expert Judgment 3- Meeting	1- work Performance information 2- Change request 3- PMPlan updates 4- Project document updates 5- OPA updates

⊛ Information Managment System: Provides tools to Project to Capture, Store, distribute information to stakeholder, Ex: table reporting, Spread Sheet Analysis, Presentation
- Graphical Capabilities Can be used to Create visual Representation.



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You are here.. You are successful
Stakeholder Managment
Yasser Elzanouny
Intiation
1 Identify Stakeholder
IN
1 Project charter
2 Procurment Documents
3 EEF
4 OPA
TT
1 Stakeholder Analysis
2 Expert Judgment
3 Meeting
Identify Potential
analyze Potential impact
Assess how Stakeholder reachor respond
Classification
Power
Interest
Influence
Impact
Out
Stakeholder Register
Identification Information
Name, Position, location, role
Assessment Information
Major requirment, expectation, influence
Stakeholder Classification
supporter, neutral, internal, external
Planning
2 Plan Stakeholder Managment
IN
1 Project mangment plan
2 Stakeholder Register
3 EEF
4 OPA
TT
1 Expert judgment
2 Meeting
3 Analytical techniques
1 unaware
2 Resistant
3 Supportive
4 Neutral
5 Leading
Stakeholder Engagment assessment Matrix
unaware
resist
Nut
Supp
lead
C
D
Out
Stakeholder managment Plan
- Desired and current level
- Scope, impact change
- interalationship, overlap
- Stakholder Commun Requirment
- Reson for distributio
Project document update
Executing
3 Manage stakeholder Engagment
IN
1 Stakeholder Managment Plan
2 Communication Managment Plan
3 Change log
4 OPA
TT
1 Communication Methods
Pull
Push
interactive
2 Interpersonal Skills
- Build trust
- Resolve Conflict
- Active listing
- overcome resistance
3 Managment Skills
- Facilitate Consesus
- influence people
- Negotiation
Out
1 Issue log
2 Change Request
3 PMPlan updates
4 Project document updates
5 OPA updates
Monitor & Control
4 Control Stakeholder Engagment
IN
1 Project mangment plan
2 Issue log
3 Work Performance Data
4 Project documents
TT
1 Information mangment system
- Electronic
- Hard Copy
- tools
2 Expert judgment
3 Meeting
Out
1 work performance Information
2 Change Request
3 Project Managment plan updates
4 Project document updates
5 OPA updates





12

PM Outline

مهام مدير المشروع

#PM_Outline





PM tasks

Initiation

1. Proje assessment + meeting relevant SH → Support evaluation of feasibility
2. Identify key deliverables → Customer manage expecation; direct achievment project goals
3. SH analysis → meet excepications; gain support
4. Identify highlevel risk, ass. → Propose implementation strategy
5. Participate Project Charter → ensure SH agreement it is element
6. Project Charter approval → Gain Commitment; acceptance for Project
7. Benefit Analysis with relev SH → validate pro with organizational; expect business value
8. informing SH approved Project Charter → ensu… deliverables; • milestone; • roles; • responsability

Closing

1. Confirm Project Scope and deliverable achieved; Final acceptance deliverables from relSH
2. Facilite Project Closure; Transfer ownership of deliverable to assign SH → accord to Project plan
3. financial, legal, administrative Closure → Communicate formal Project Closure; ensure transfer of libilaty
4. Prepare, Shar final Project report → accord to Comm plan; document, Convey Project Performance; assist Project evaluation
5. Collect lessons learned + Conduct Comprehensive Project review → update Organization Knowledge base; Potential use in future
6. Archieve documents, materials → Comply statutory requirements; Adwit
7. Obtain feedback from relevan SH → Evaluate their Satisfaction based on SH plan

Monitor & Control

1. Measure project performance → Follow Quality Plan
2. Manage changes to project → Follow Change Plan; Identify, Quantify any variance and corrective actions
3. Verify project deliverables → Follow Quality standars; to meet project requirments and business need; ensure project goals remain aligned with business need
4. Monitor, assess risk by evaluating of response strategy → manage impact risk and opportunity
5. Review issue log; update if nessesary; determine corrective actions → minimize impact on project
6. Capture and manage lessons learned → enable continuous improvment
7. Maintain SH relation → follow SH plan; to recieve continued support + manage expecation
8. Manage the flow of information → follow Comm Plan; to keep SH engaged and informed

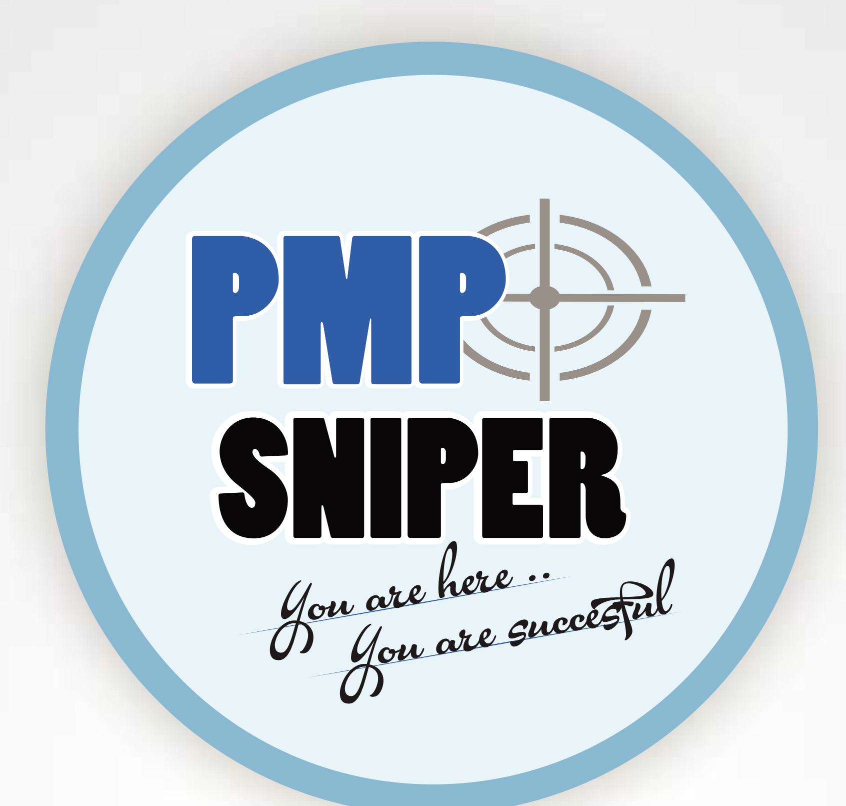
Execution

1. Acquire, manage Proje resource → follow HR, Procurement Plan; Meet Project Requirments
2. Manage task execution → by follow PmPlan; Achieve Project deliv…; lead, develope project team
3. Implement Quality Plan → ensure work performed accordance with Quality Standa…
4. Implement approved changes and corrective actions → by Change managment Plan; to Meet Project requirments
5. Implement approved actions → follow risk plan; to minimize impact risk, take advantage of opportunity
6. Monitor Procurement activities → accord to Procurement plan; Compliance Project objective

Planning 13 task

1. Review, assess detailed Project requirment, Constrains
   - based on: Project Charter, lessons learned
   - using: Requirment gather technique
   - to: Establish detailed Project deliverables
2. Develop Scope managmen Plan
   - based on: approved Project Scope
   - using: Scope managmt technique
   - to: define, maintain, manage Scope
3. Develop Cost managment Plan
   - based on: scope, schedule, resource, approved Project Charter
   - using: estimate techniques
   - to: manage Project Cost
4. Develop Project Schedule
   - based on: deliverable, milestone, Scope, resorce managment Plan
   - to: manage timely Completion of Project
5. Develope HR Plan
   - by define: roles, responsability of team
   - to: Create Project organization structure
   - Provide guide how resource will be assigned
6. Develope Commu Plan
   - based on: Project organization structure, SH requirment
   - to: define, manage Flow of information
7. Develope ProCurment Plan
   - based on: scope, budget, schedule
   - to: Ensure required Project resource will be available
8. Develope Quality Plan + define Quality standards
   - based on: scope, risk, requirment
   - to: Prevent occurence defects, Control Cost of Quality
9. Develope Change managment Plan
   - by define: how Change will be addressed
   - to: track, manage Change
10. Plan risk managment
    - Define: risk response strategy
    - to: manage uncertainty and opportunity through Project life cycle
11. Present Project managment Plan to relevant SH
    - to: obtain approval to ProCeed Project execution
12. Conduct Kick of meeting
    - Communicate start Project
    - to: Inform and engage SH, gain Commitment
13. Develop SH Plan
    - by: analyzing needs, interest, Potential impact
    - to: effectively manage SH excepecations
    - engage them Project decision

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